RF Fans

Fans RP
Fans RQ
Fans RO
Fans RE
Fans RF
Fans RPH
Fans EX
Controllers ...

FAN USE

A roof fan with vertical outlet is intended for air exhaust from a room with normal environment in accordance with the chapter „Operating Conditions, Position". When selecting a fan for the required air flow and pressure, the following general rule is applied; fan motors with a greater number of poles reach the required parameters at lower RPM, which results in lower noise and longer service life. Fans equipped with a suitable roof adaptor (optional) can be situated on flat as well as sloping roofs.

OPERATING CONDITIONS, POSITION

The device can be used in normal rooms (IEC 60364-5-51, resp. ČSN 332000-5-51 ed.3, ČSN 33 2000-1 ed.2) extended for outdoor areas and in areas exposed to weather effects with ambient temperature ranging from -30 °C to +40 °C without additional measures. The fan may only be used to transport air without solid, fibrous, sticky, aggressive or explosive impurities. The transported air must be free of corrosive chemicals or chemicals aggressive to zinc, aluminium and plastics. Maximum permissible temperature of the transported air must not exceed +40 °C (three-phase fans), respectively +60 °C (single-phase fans). RF fans can only be operated, transported or stored in the basic horizontal position (inlet situated from below).

DIMENSIONAL RANGE

RF fans are manufactured in a range of four sizes according to the dimensions of the base. Several fans, differing mainly in the number of poles of the used motor, are available for each size. When planning the fan for the required air flow and pressure, the following general rule is applied; fan motors with a greater number of poles reach the required parameters at lower RPM, which results in lower noise and longer service life. The standard dimensional and performance range of single-phase and three-phase RF fans enables designers to optimize all parameters for air flow rates from 300 m^3/h up to 14,000 m^3/h.

MATERIALS

The external casing of RF fans is made of sheet aluminium, which provides very good resistance against corrosion in industrial and coastal areas. Basic support parts of the largest fan housing size RF 100/.. are made of sheet steel protected by backed powder coating.

Removable outlet pockets are fitted with elements enabling quick water drainage and with gravity dampers protecting the fan's internal area against direct moisture penetration. A fine perforated protecting screen prevents dirt and foreign objects entering the fan impeller area. The fan impellers up to fan size RF100/63 are made of plastic; the RF100/71-6D fan impeller is made of aluminium. The motor armatures are made of aluminium, respectively grey cast iron. The motor's high quality enclosed ball bearings with permanent lubricant filling enable the fans to reach a service life of 20,000 operating hours (three-phase motors), respectively 40,000 operating hours (single-phase motors) without maintenance. Connection of the impeller to the three-phase motor shaft up to the RF 56 and RF 71 sizes is carried out using a fixed hub while with the RF100 size uses a Taper-Lock® bushing.

MOTORS

According to the type, roof fans can be equipped with one of two types of power units:

- **AC 1× 230 V/50 Hz:** Compact three-phase asynchronous fan motors with an external rotor and a resistance armature. The motors are situated inside the impeller (so-called motor impeller), and during operation are optimally cooled by the flowing air. They feature low build-up current, and enable voltage control. For the motor degree of protection, refer to Table #3 - Motor Thermal Protection, in the chapter „Motor Protection". Single-phase motors are equipped with a starting capacitor, degree of protection IP 54, which is mounted next to the terminal box (for capacity values, see Table #3).
- **AC 3× 400 V/230 V/50 Hz (Y/D):** Flange-mounted motors with a short-circuit armature. The terminal box is situated on the motor's body. These motors are situated out of the air flow, and thus they are protected against direct contact with the flowing air. The motors are cooled by a system of internal channels. Degree of protection is IP55. The motor thermal protection is ensured by a thermo-contact which is brought out to the cable; for details, refer to the chapter „Motor Protection".

ELECTRICAL EQUIPMENT

For the wiring diagrams and description, please refer to page 162.

MOTOR PROTECTION

As standard, permanent monitoring of the internal motor temperature is used in all motors. The permissible limit temperature is monitored by thermo-contacts situated in the motor winding, which after being connected to the protective contactor circuit protect the motor against overheating due to phase failure, forced motor braking, current protection circuit breakdown or excessive temperature of the transported air.
Thermal protection by means of thermo-contacts is comprehensive and reliable providing they are correctly connected. This protection is essential especially for speed controlled and frequently started motors and motors highly thermally loaded by hot transported air.

The fan motors are equipped with thermo-contacts in two versions:

Serial Thermo-Contact (self-acting)

The motor thermo-contact connected in series to the motor winding will disconnect the power supply if the winding temperature exceeds +130 ºC. After cooling down, the thermo-contact closes, and the fan will start. All RF 40/xx and RF 56/31-4E fans are equipped with serial thermo-contacts, see summary table of parameters. Beware of possible automatic fan start when servicing the fan! The fan must be disconnected from the power supply when working on it (outlet „pockets" removed)!
Application of this operational behaviour (non-signalled shutdown) must be evaluated within the scope of the air-handling device project.

Brought-Out Thermo-Contact (control)

Fans equipped with a thermo-contact brought out into the terminal box (TK- TK terminal) must be connected to the recommended protective device. When the temperature exceeds critical values, the thermo-contact will disconnect the control circuit of the protective device, which will further disconnect the motor power supply. The motor restart must be conditioned by the operator's intervention, check and removal of the protective shutdown causes. Repeated restart of the motor without removing the cause of motor overheating results in shorter service life of the product, or can damage the motor.
All fans, except the RF 40/.. and RF 56/31-4E lines, are equipped with brought-out thermo-contacts, see summary table of parameters..

Maximum thermo-contact permanent loading is 1.2 A at 250V / 50 Hz (cos φ 0,6) is 1,2 A (resp. 2 A respectively cos φ 1,0).

Fan motors with brought-out TK thermo-contacts cannot be protected by conventional overcurrent protection elements!
Using thermal protection is the most important condition for warranty validity.

1-PHASE FANS OUTPUT CONTROL

Stepless Electronic Control

- → Stepless thyristor fan output control is possible from about 25 % to 100 % fan power level; minimum supply voltage of the fan must be limited by controller so that reliable start-up of fan after a power outage is possible.
- → This is very suitable for the smallest (RF 40/... a RF 56/31-4E) fans with a serial thermo-contact.

Five Stage Voltage Control

→ TRN–E: A single-phase five-stage transformer controller equipped with integrated fan motor protection. It is operated using the ORe5 remote controller; therefore, it can be situated out of the operator's reach.
→ TRRE: A simplified single-phase transformer controller motor protection without motor temperature protection; therefore, it must always be used in connection with control units or STE protecting relays. Output stages are selected by the rotary selector situated on the controller's front panel, and therefore, they must be within the operator's reach.

Mainly for fans with brought-out thermocontact, eventually for fans with serial thermocontact (deblocking of protection within TRN should be activated). For information, see the documentation for TRN regulators.

TABLE 1
THE INPUT VOLTAGE AND CONTROLLER'S STAGE

MOTOR TYPE	CURVE CHARACTERISTICS – CONTROLLER'S STAGE				
	5	4	3	2	1
1 – phase	230 V	180 V	160 V	130 V	105 V

THREE-PHASE FAN OUTPUT CONTROL

As standard, three-phase fans are equipped with IEC asynchronous motors with a short-circuit armature. The motor speed can be controlled by changing the frequency using a frequency inverter. It is advisable to connect the frequency inverter to the fan using a shielded cable, and make it as short as possible in accordance with the frequency inverter documentation. Power and control cables must be led separately.

Warning:
If fans with frequency inverters 1× 230 V / 3× 230 V, REMAK standard up to output of 0.75 kW, are used, it is necessary to reconnect the motors for AC 3× 230 V D and verify, respectively adjust settings of motor nominal values in the frequency inverter.
The frequency inverter ensures over-current protection of the motor by disconnecting the power supply. Therefore, failure removal must be confirmed on the frequency converter to enable fan restart.

ACCESSORIES

RF fans are part of the wide range of Vento modular venting and air-handling system components. Any air-handling assembly, from simple venting to sophisticated comfortable air-conditioning, can be created by selecting suitable elements; however, RF fans can only be used for air exhausting. To make the installation easy, special accessories can be delivered:

- SNK roof adaptor – short
- NDH roof adaptor with an attenuator - long
- VS low-pressure damper / DV elastic connection
- STE and STD protecting relays
- Electronic PE controller for single-phase fans
- TRN five-stage controllers and ORe 5 controller
- RFFM frequency inverter for three-phase motors, see table 3

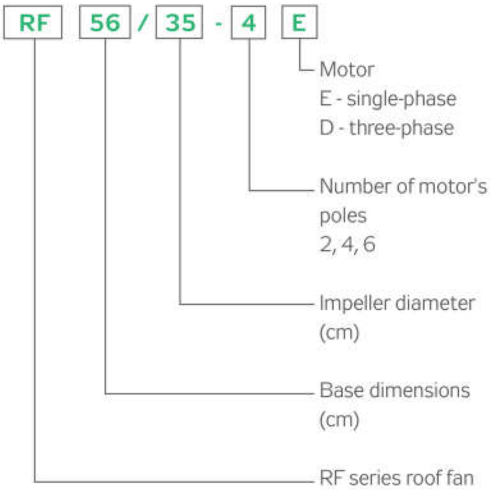
TABLE 2
OVERVIEW OF FREQUENCY INVERTERS

Frequency inverter	Power output	Supply	Recommended for:
Frequency inverter equipped with protecting roof (IP 21)			
RFFMIM031A20	0.37 kW	1× 230 V/3× 230 V	RF56/31-4D, RF56/35-4D, RF71/50-6D
RFFMIM071A20	0.75 kW	1× 230 V/3× 230 V	RF56/40-4D, RF71/45-4D, RF100/56-6D
RFFMIM153B20	1.5 kW	3× 400 V/3× 400 V	RF71/50-4D, RF100/63-6D
RFFMIM223B20	2.2 kW	3× 400 V/3× 400 V	RF100/56-4D, RF100/71-6D
Frequency inverter (IP54)			
RFFMIB073B50	0.75 kW	3× 400 V/3× 400 V	RF56/31-4D, RF56/35-4D, RF71/50-6D RF56/40-4D, RF71/45-4D, RF100/56-6D
RFFMIB153B50	1.5 kW	3× 400 V/3× 400 V	RF71/50-4D, RF100/63-6D
RFFMIB223B50	2.2 kW	3× 400 V/3× 400 V	RF100/56-4D, RF100/71-6D

FAN DESCRIPTION AND DESIGNATION

The type designation of RF roof fans in projects is defined by the key shown in figure # 1. For example, type designation RF 56/35-4D specifies the type of fan, impeller and motor..

FIGURE 1 – FAN TYPE DESIGNATION



SERVICE DATA

A table showing the most important values is situated next to each fan's characteristics in the „Data Section" of the catalogue. The meaning of individual lines is explained in the following table #3. These values are also listed on each fan's rating plate.

TABLE 3 – FAN PARAMETERS

RF 40/19-2E			
Power supply	Y	230 V	50 Hz
Max. electric input	P_{max}	[W]	59
Max. current (5c)	I_{max}	[A]	0.24
Mean speed	n	[min^{-1}]	2480
Capacitor	C	[μF]	2
Max. working temp.	t_{max}	[ºC]	60
Max. Air flow rate	V_{max}	[m^3/h]	559
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	314
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	12
Five-stage controller	type		TRN 2E
Protecting relay	type		STE

The meaning of individual lines is as follows:

1 Value of nominal power supply voltage
2 Maximum power input of the motor at working point 5c.
3 Maximum current at nominal voltage at working point 5c.
4 Mean speed, rounded to tens, measured at working point 5b.
5 Capacitor capacity with single-phase fans.
6 Maximum permissible transported air temperature.
7 Maximum air flow at working point 5c.
8 Maximum total pressure between points 5a–5c
9 Minimum permissible static pressure at point 5c.
10 Total weight of the fan.
11 Recommended fan output controller.
12 Recommended protecting relay of the fan without controller and control unit.

NOISE PARAMETERS

In this catalogue you can find values of noise levels radiated to the inlet and surroundings (i.e. also outlet), the total sound power level L_{WA} [dB (A)], i.e. the total level of radiated A-scale sound power is always provided. Further, value L_{WAokt}, i.e. sound power level, for octave bands from 125 Hz to 8 kHz is also provided. Knowledge of the octave levels is essential to assess the noisiness of the air-handling unit with a given fan.

MEASURING METHOD USED

Noise parameters of RF fans are measured in Remak's acoustic testing laboratory. The measurements are performed in accordance with the ČSN EN ISO 3743-2 Standard, which establishes the technical method of the sound power level determination in a special reverberant chamber. A measuring line of aerodynamic parameters is used to set the fan to the required working point when measuring the noise. For a recapitulation of technical acoustic terms, an explanation of measuring methodology and outline of noise attenuation, refer to the catalogue sections „„RP Fans".

NOISE LEVEL CALCULATION

The result of the calculation is sound level L_{pA} at a place within the personnel's reach or other places where the sound level limit must be observed. If it concerns a roof fan, then sound level L_{pA} in the selected outdoor area in its surroundings and sound level L_{pA} in the ventilated room are relevant. These tasks are quite different; therefore, the general calculation procedures for both cases are outlined below.

OUTDOOR SOUND LEVEL

When calculating the sound level at a selected distance within the roof fan's surroundings, we can consider the values of the reflected sound waves as insignificant; therefore, it is possible to use an equation for sound propagation in free space. For this case, the following relationship is applicable:

$$L_{p(A)} = L_{W(A)} + 10 \log [Q / (4\pi r^2)] \qquad (1)$$

$L_{P(A)}$	sound level [dB]
$L_{W(A)}$	sound power level (A)[dB]
Q	Directional coefficient for the given direction (1–8) [-]
r	Distance (source – person) [m]

If the space angle of the fan's noise is 180º, which is applicable to most installations of RF fans, then the value of the directional coefficient

$$Q = 4\pi/\upsilon \qquad (2)$$

The directional coefficient Q specifies the influence of noise propagation limiting surfaces, and is a function of the space angle υ of the fan's noise radiation. It can be calculated using the following relationship

$$Q = 2$$

Using equation (1), the values of sound level $L_{p(A)}$ for different sound power levels $L_{W(A)}$ and selected distances **r** were calculated and transferred to Graph 1. This can be used for simple determination of the sound level (A--scale sound pressure level at distance **r** from the fan).

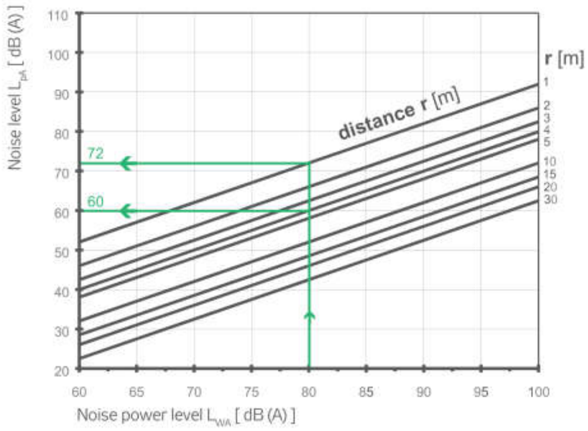
SOUND LEVEL IN VENTILATED ROOM

The noise radiated by the fan is transferred through the air ducting to the ventilated room. On the one hand, the noise is attenuated by the duct, attenuators, and other air-handling elements; on the other hand, it is increased by the inherent noise of some components, especially the inherent noise of ventilation grills. To determine the sound level in the ventilated room, first it is necessary to determine the total sound power level radiated to the ventilated room. As the sound transfer and attenuation depend on the frequency, the sound power level must be calculated for each octave band separately. Attenuation of attenuators and all other parts of the duct line leading to the ventilated room in which the noise level is being determined is subtracted from the sound power values:

$$L_{Wokt\,(i+1)} = L_{Wokt(i)} - D_{okt(i)} \qquad (3)$$

$L_{Wokt\,(i+1)}$ is the sound power level at the particular octave behind the „i-th" element of the duct line. $D_{okt(i)}$ is the value of attenuation at the particular octave behind the „i-th" element of the duct line.
Inherent noise of individual components of the duct line depends mainly on the air flow velocity. However, the noise of many components is lower than the noise radiated by the fan so it can be ignored. However, the inherent noise level of the „i-th" component must be compared to value $L_{wokt(i+1)}$, i.e. the fan sound power level reduced by the attenuation of preceding components.

GRAPH 1 – L_{WA} TO L_{PA} CONVERSION AT DISTANCE „r"



This especially applies for ventilation grills, where the fan noise can be attenuated to such an extent that the inherent noise of the ventilation grill may be higher, especially at high air flow velocity.

Using general equation (2), which is valid for total sound pressure in a closed room, the octave sound pressure level L_{pokt} can be calculated from the values of sound power L_{wokt} radiated into the room.

$$L_P = L_W + 10 \log [Q / (4\pi r^2) + 4.(1 - \alpha_m) / (S.\alpha_m)] \quad (4)$$

L_P	sound pressure level [dB]
L_W	sound power level [dB]
Q	directional coefficient for the given direction (1–8) [-]
r	Distance (source – person) [m]
α_m	mean coefficient of sound absorption capacity [-]
S	room enclosing area [m²]

Then, the total sound pressure level in the room can calculated using the following relationship

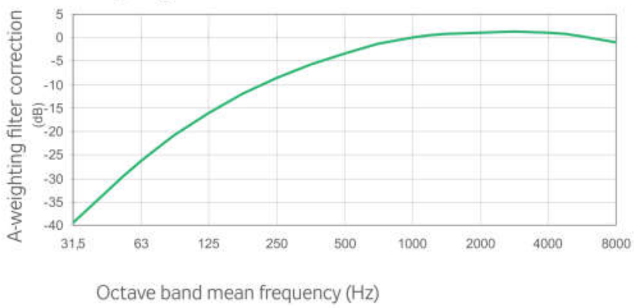
$$L_{PA} = 10.\log \Sigma 10^{0,1(Lpokt + KAokt)} \quad (5)$$

For the values of correction factor K_{Aokt} for particular octave bands, refer to table #4.
If the calculated sound level in the checked place is not satisfactory, it is necessary to take additional anti-noise measures, e.g. complete the air-handling assembly with an additional attenuator.

TABLE 4
A-WEIGHTING FILTER CORRECTION VALUES

Octave band mean frequency	Hz	125	250	500	1000	2000	4000	8000
A-weighting filter correction K_A	dB	-16	-8,6	-3,2	0	1,2	1	-1,1

A-weighting filter correction curve



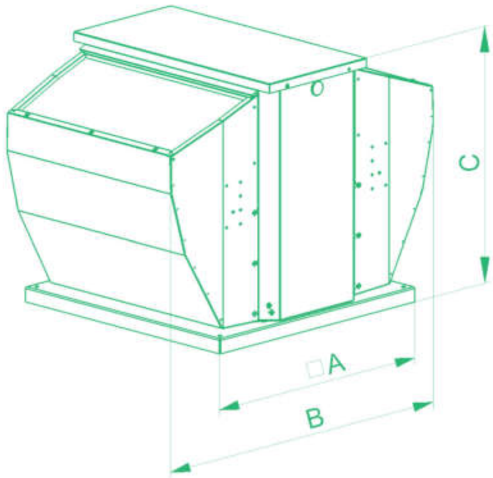
DIMENSIONS, WEIGHTS AND PERFORMANCE

For the most important data and dimensions of RF fans, refer to figure #2 and table #5.

TABLE 5 – BASIC DIMENSIONAL RANGE

Designa-tion	Base dimensions A [mm]	Max. width B [mm]	Height C [mm]
RF 40/ ..	408	560	400
RF 56/ ..	568	780	590
RF 71/ ..	718	960	690
RF 100/ ..	1008	1360	900

FIGURE 2 – BASIC DIMENSIONS OF THE FAN



FOR OPERATING FAN PARAMETERS AND THE ALLOCATION OF OUTPUT CONTROLLERS, REFER TO TABLE # 6.

SYMBOLS USED IN TABLE 6:

V_{max}	Maximum air flow rate
n	Fan speed measured at the highest Efficiency working point (5b), rounded to tens
U	Nominal power supply voltage of the motor without control (all values in the table are to this voltage)
$P_{max.}$	Electric motor maximal power output
$I_{max.}$	Maximum phase current at voltage U (this value must be checked)
$t_{max.}$	Maximum permissible transported Air temperature at air flow $V_{max.}$
C	Capacitor capacity with single-phase fans
FM.	Frequency inverter
m	Weight of the fan (±10%)
ErP2015	Fan compliance with the requirements of Regulation 2009/125/EC (NOT compliant fans must not be used within EU region)

TABLE 6 – BASIC PARAMETERS AND NOMINAL VALUES OF RF FANS

Fan type	Drive type (*)	V_{max}	p_{max}	P_{max}	U_{nom}	n_{nom}	t_{max}	Motor degree of protection	Sound power to the inlet L_{WA}	Sound power to the surroundings L_{WA}	m	Drive weight	ErP2015
		m³/h	Pa	W	V	min^{-1}	°C	IP	$dB_{(A)}$	$dB_{(A)}$	kg	kg	
SINGLE-PHASE FANS													
RF 40/19-2E	MOK	550	310	60	230	2500	60	IP 44	67	71	11,5	3,8	✓
RF 40/22-2E	MOK	950	370	100	230	2560	60	IP 44	70	74	12,0	4,2	✓
RF 40/25-2E	MOK	1 350	540	200	230	2420	60	IP 44	73	76	12,5	5,0	
RF 40/28-4E	MOK	1 250	220	110	230	1360	60	IP 44	62	68	12,5	4,7	✓
RF 56/31-4E	MOK	1 800	280	140	230	1240	60	IP 44	70	70	22	7,7	
RF 56/35-4E	MOK	2 500	330	310	230	1360	60	IP 54	71	72	25	10,5	
RF 56/40-4E	MOK	3 500	420	490	230	1350	60	IP 54	72	74	27	12,0	
THREE-PHASE FANS													
RF 56/31-4D	OK+M	2 000	320	120	400	1360	40	IP 55	68	71	25	10,5	✓
RF 56/35-4D	OK+M	2 600	330	250	400	1380	40	IP 55	71	74	26	11,5	✓
RF 56/40-4D	OK+M	4 000	470	550	400	1400	40	IP 55	74	77	30	15	✓
RF 71/45-4D	OK+M	5 700	500	750	400	1400	40	IP 55	80	80	40	21	✓
RF 71/50-4D	OK+M	7 400	750	1100	400	1400	40	IP 55	81	84	43	23	✓
RF 71/50-6D	OK+M	5 200	310	370	400	900	40	IP 55	72	72	40	20	
RF 100/56-4D	OK+M	13 000	900	2200	400	1420	40	IP 55	78	83	125	50	✓
RF 100/56-6D	OK+M	8 200	380	550	400	900	40	IP 55	66	66	115	41	
RF 100/63-6D	OK+M	11 500	500	1100	400	910	40	IP 55	74	80	117	45	✓
RF 100/71-6D	OK+M	14 000	600	2200	400	940	40	IP 55	84	87	135	60	✓

(*) Note: MOK ...Compact motors with an external rotor situated in the air flow,
OK+M ...IEC asynchronous motor situated outside the air flow, impeller on the shaft

TABLE 7 – CONNECTION OF SINGLE-PHASE FANS, PROTECTION AND CONTROL

Fan type	Motor current (A)	Starting current (I_A/I_N)	Thermocontact motor protection (TK)	Capacitor (µF)	Control without regulation	Control with regulation
SINGLE-PHASE FANS (1× 230 V+N+PE / 50 HZ)						
RF 40/19-2E	0,3	0,5	TK serial	2	on/off switch	TRN 2E, TRRE 2, PE-4
RF 40/22-2E	0,5	0,8	TK serial	2,5	on/off switch	TRN 2E, TRRE 2, PE-4
RF 40/25-2E	0,9	1,7	TK serial	6	on/off switch	TRN 2E, TRRE 2, PE-4
RF 40/28-4E	0,5	1,2	TK serial	4	on/off switch	TRN 2E, TRRE 2, PE-4
RF 56/31-4E	0,6	1,2	TK serial	4	on/off switch	TRN 2E, TRRE 2, PE-4
RF 56/35-4E	1,5	3,7	TK brought-out	6	STE	TRN 2E, TRRE 2+STE, PE-4+STE
RF 56/40-4E	2,2	5	TK brought-out	10	STE	TRN 2E, TRRE 2+STE, PE-4+STE

TABLE 8 – CONNECTION OF THREE-PHASE FANS, PROTECTION AND CONTROL

Fan type	Motor current (A)	Starting current (I_A/I_N)	Thermocontact motor protection (TK)	Control without regulation
THREE-PHASE FANS - CONTROL WITHOUT REGULATION (Y 3× 400 V +PE / 50 HZ)				
RF 56/31-4D	0,4	4,4	TK brought-out	STD (Y 3 × 400 V)
RF 56/35-4D	0,7	5,2	TK brought-out	STD (Y 3 × 400 V)
RF 56/40-4D	1,3	5,2	vyvedený TK	STD (Y 3 × 400 V)
RF 71/45-4D	1,9	6	TK brought-out	STD (Y 3 × 400 V)
RF 71/50-4D	2,7	6	TK brought-out	STD (Y 3 × 400 V)
RF 71/50-6D	1,2	4,7	TK brought-out	STD (Y 3 × 400 V)
RF 100/56-4D	4,8	7	TK brought-out	STD (Y 3 × 400 V)
RF 100/56-6D	1,7	4,7	TK brought-out	STD (Y 3 × 400 V)
RF 100/63-6D	3,1	5,5	TK brought-out	STD (Y 3 × 400 V)
RF 100/71-6D	4,5	6,5	TK brought-out	STD (Y 3 × 400 V)

TABLE 9 – THREE-PHASE MOTOR CONNECTION AND APPROPRIATE FREQUENCY INVERTERS

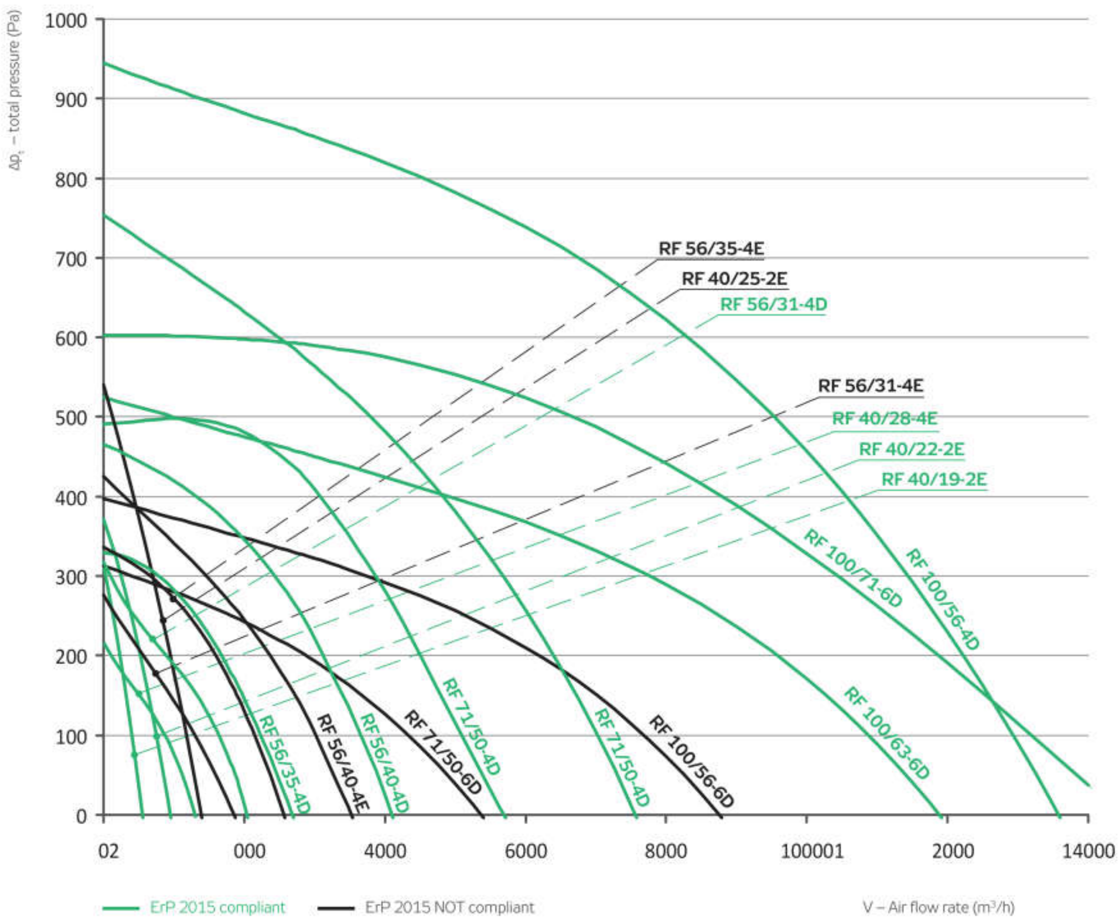
Fan type	Frequency inverter output kW	Frequency inverter IP21 (FC 051)					Frequency inverter IP54 (FC 101)				
		Connection with regulation **)		Frequency inverter			Connection with regulation **)		Frequency inverter		
		Voltage system *)	Current (A)	Frequency inverter marking	Supply	Max. input current (A)	Voltage system *)	Current (A)	Frequency inverter marking	Supply	Max. input current (A)
THREE-PHASE FANS - CONTROL WITH REGULATION (Δ 3X230V +PE/50HZ OR Y 3X400V+PE/50HZ)											
RF 56/31-4D	0.37	Δ 3× 230 V	0,8	RFFMIM031A20	1x 230V	6,1	Y 3× 400 V	0,4	RFFMIB073B50	3× 400V	2,1
RF 56/35-4D	0.37	Δ 3× 230 V	1,3	RFFMIM031A20	1x 230V	6,1	Y 3× 400 V	0,7	RFFMIB073B50	3× 400V	2,1
RF 56/40-4D	0.75	Δ 3× 230 V	2,6	RFFMIM071A20	1x 230V	11,6	Y 3× 400 V	1,3	RFFMIB073B50	3× 400V	2,1
RF 71/45-4D	0.75	Δ 3× 230 V	3,3	RFFMIM071A20	1x 230V	11,6	Y 3× 400 V	1,9	RFFMIB073B50	3× 400V	2,1
RF 71/50-4D	1.5	Y 3× 400 V	2,7	RFFMIM153B20	3x 400V	5,9	Y 3× 400 V	2,7	RFFMIB153B50	3× 400V	3,5
RF 71/50-6D	0.37	Δ 3× 230 V	2,2	RFFMIM031A20	1x 230V	6,1	Y 3× 400 V	1,2	RFFMIB073B50	3× 400V	2,1
RF 100/56-4D	2.2	Y 3× 400 V	4,8	RFFMIM223B20	3x 400V	8,5	Y 3× 400 V	4,8	RFFMIB223B50	3× 400V	4,7
RF 100/56-6D	0.75	Δ 3× 230 V	2,9	RFFMIM071A20	1x 230V	11,6	Y 3× 400 V	1,7	RFFMIB073B50	3× 400V	2,1
RF 100/63-6D	1.5	Y 3× 400 V	3,1	RFFMIM153B20	3x 400V	5,9	Y 3× 400 V	3,1	RFFMIB153B50	3× 400V	3,5
RF 100/71-6D	2.2	Y 3× 400 V	4,5	RFFMIM223B20	3x 400V	8,5	Y 3× 400 V	4,5	RFFMIB223B50	3× 400V	4,7

(*) Voltage system: 1× 230 V + N + PE / 50 Hz, 3× 230 V + PE / 50Hz, 3× 400 V + PE / 50 Hz.
(**) Connection of the motor to the control delivered as standard accessory.

DATA SECTION

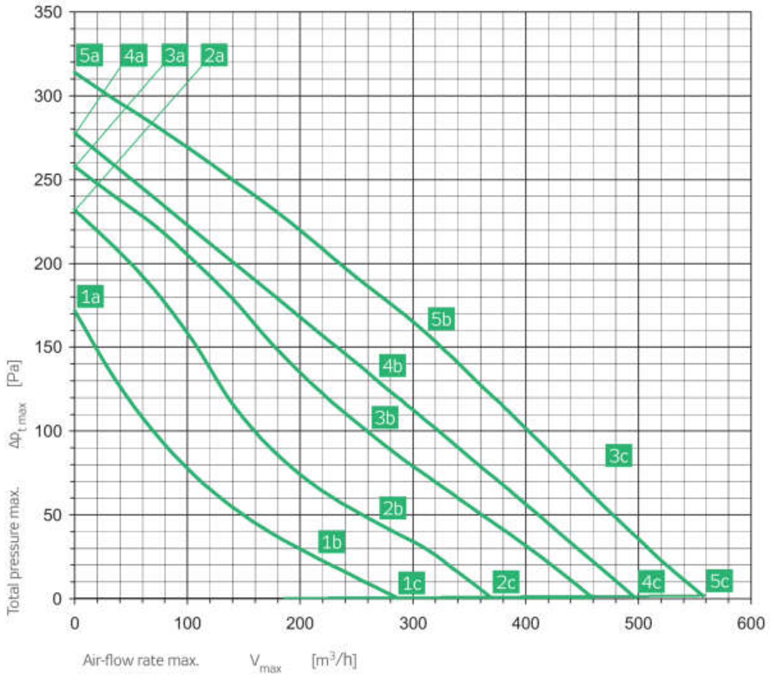
Graph 2 enables quick selection of a suitable fan and alternate comparison of RF fans. Only the highest characteristics of each fan at nominal supply voltage, i.e. without a controller or with a controller set to five stage, are included in this graph.
The Data Section of the catalogue contains all important information and measured data of RF fans.

GRAPH 2 – RF FAN CHARACTERISTICS QUICK SELECTION



RF 40/19-2E

ErP 2015



RF 40/19-2E

Power supply		230 V	50 Hz
Max. electric input	P_{max}	[W]	59
Max. current (5c)	I_{max}	[A]	0.24
Mean speed	n	[min^{-1}]	2480
Capacitor	C	[μF]	2
Max. working temp.	t_{max}	[°C]	60
Max. air-flow rate	V_{max}	[m³/h]	559
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	314
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	12
Five-stage controller	type		TRN 2E
Protecting relay	type		STE

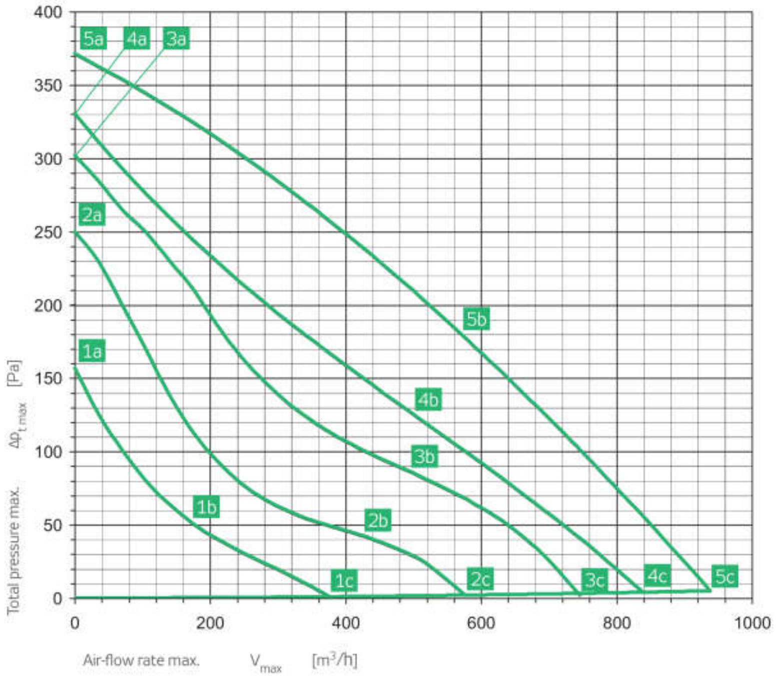
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WA} [dB(A)]				
L_{WA}	67	67	71	71
Sound power level L_{WAokt} [dB(A)]				
125 Hz	48	47	47	46
250 Hz	55	55	61	62
500 Hz	57	57	65	64
1000 Hz	61	61	66	66
2000 Hz	62	62	66	66
4000 Hz	58	58	62	62
8000 Hz	56	57	58	57

RF 40/19-2E

Parameters in selected working points	5a	5b	5c	4a	4b	4c	3a	3b	3c	2a	2b	2c	1a	1b	1c
Voltage U [V]		230			180			160			130			105	
Current I [A]	0.24	0.24	0.22	0.23	0.23	0.21	0.22	0.22	0.20	0.21	0.20	0.20	0.17	0.18	0.17
Electric input P [W]	58	59	54	45	44	41	38	37	34	28	28	29	18	17	21
Speed n [min^{-1}]	2480	2483	2355	2190	2200	2319	1989	1999	2140	1604	1651	1738	1199	1231	1324
Air-flow rate V [m³/h]	0	306	559	0	263	496	0	256	460	0	261	370	0	207	288
Static pressure Δp_s [Pa]	314	161	0	278	133	0	258	100	0	232	46	0	172	27	0
Total pressure Δp_t [Pa]	314	161	2	278	133	1	258	100	1	232	47	1	172	27	0

RF 40/22-2E

ErP 2015



RF 40/22-2E			
Power supply		230 V	50 Hz
Max. electric input	P_{max}	[W]	102
Max. current (5c)	I_{max}	[A]	0.42
Mean speed	n	[min^{-1}]	2450
Capacitor	C	[μF]	2.5
Max. working temp.	t_{max}	[°C]	60
Max. air-flow rate	V_{max}	[m³/h]	941
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	371
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	12
Five-stage controller	type		TRN 2E
Protecting relay	type		STE

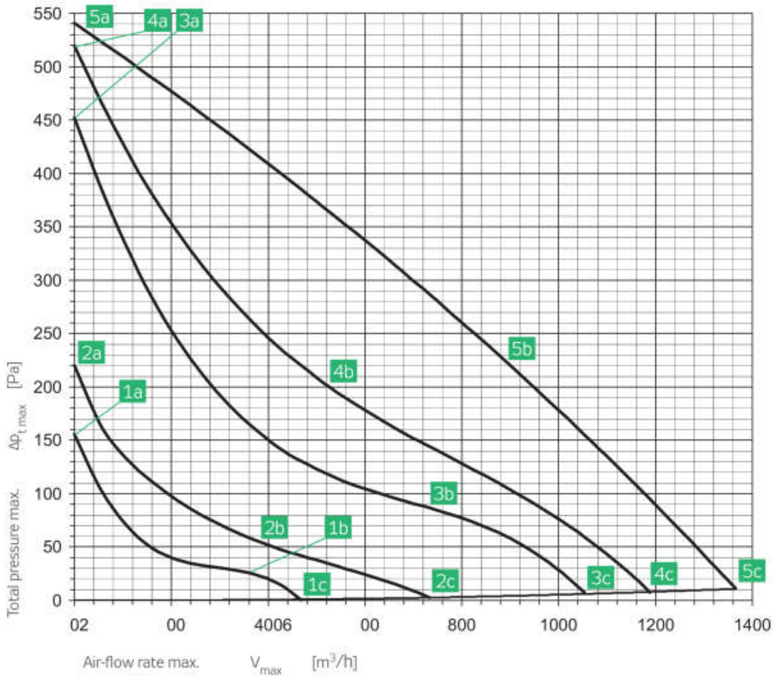
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{MAX} [dB(A)]				
L_{WA}	70	71	74	74
Sound power level L_{WAokt} [dB(A)]				
125 Hz	48	47	50	48
250 Hz	61	60	63	64
500 Hz	61	61	68	67
1000 Hz	65	65	68	68
2000 Hz	63	64	67	69
4000 Hz	59	61	63	63
8000 Hz	64	65	63	64

RF 40/22-2E

Parameters in selected working points	5a	5b	5c	4a	4b	4c	3a	3b	3c	2a	2b	2c	1a	1b	1c
Voltage U [V]		230			180			160			130			105	
Current I [A]	0.41	0.42	0.36	0.41	0.42	0.36	0.40	0.40	0.37	0.37	0.37	0.35	0.31	0.31	0.31
Electric input P [W]	98	102	86	79	81	72	68	69	60	49	49	47	35	35	34
Speed n [min^{-1}]	2478	2445	2588	2113	2085	2317	1880	1903	2098	1442	1509	1640	1100	1100	1145
Air-flow rate V [m³/h]	0	572	941	0	487	841	0	491	745	0	413	577	0	166	377
Static pressure Δp_s [Pa]	371	179	0	331	127	0	302	86	0	249	44	0	157	54	0
Total pressure Δp_t [Pa]	371	181	5	331	129	4	302	87	3	249	45	2	157	54	1

RF 40/25-2E

ErP 2015 NOT compliant



RF 40/25-2E

Power supply		230 V	50 Hz
Max. electric input	P_{max}	[W]	206
Max. current (5c)	I_{max}	[A]	0.87
Mean speed	n	[min^{-1}]	2430
Capacitor	C	[μF]	6
Max. working temp.	t_{max}	[°C]	60
Max. air-flow rate	V_{max}	[m³/h]	1393
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	541
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	13
Five-stage controller	type		TRN 2E
Protecting relay	type		STE

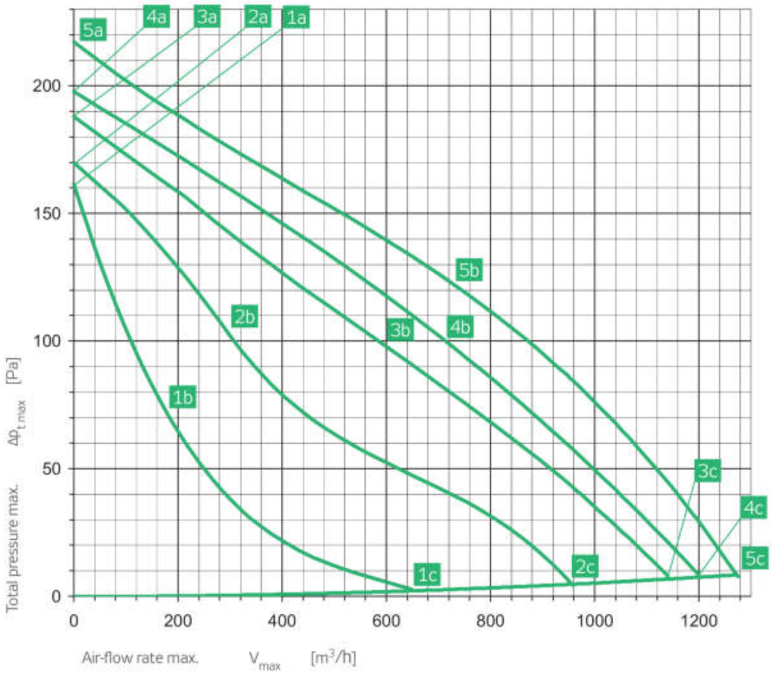
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WA} [dB(A)]				
L_{WA}	73	75	76	79
Sound power level L_{WAokt} [dB(A)]				
125 Hz	56	57	51	51
250 Hz	63	62	66	70
500 Hz	67	67	70	73
1000 Hz	70	72	71	73
2000 Hz	64	65	68	72
4000 Hz	59	60	64	66
8000 Hz	63	65	62	67

RF 40/25-2E

Parameters in selected working points	5a	5b	5c	4a	4b	4c	3a	3b	3c	2a	2b	2c	1a	1b	1c
Voltage U [V]		230			180			160			130			105	
Current I [A]	0.83	0.87	0.71	0.89	0.94	0.78	0.89	0.87	0.80	0.81	0.82	0.79	0.66	0.66	0.66
Electric input P [W]	199	206	169	166	174	147	147	143	133	109	110	108	72	72	72
Speed n [min^{-1}]	2471	2426	2570	2038	1943	2260	1730	1805	1992	1196	1122	1403	867	891	895
Air-flow rate V [m³/h]	0	903	1393	0	513	1217	0	761	1072	0	368	747	0	351	469
Static pressure Δp_s [Pa]	541	221	0	519	204	0	452	90	0	219	58	0	156	27	0
Total pressure Δp_t [Pa]	541	225	11	519	205	8	452	93	6	219	59	3	156	27	1

RF 40/28-4E

ErP 2015



RF 40/28-4E			
Power supply		230 V	50 Hz
Max. electric input	P_{max}	[W]	112
Max. current (5c)	I_{max}	[A]	0.51
Mean speed	n	[min^{-1}]	1340
Capacitor	C	[μF]	4
Max. working temp.	t_{max}	[°C]	60
Max. air-flow rate	V_{max}	[m^3/h]	1270
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	217
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	13
Five-stage controller	type		TRN 2E
Protecting relay	type		STE

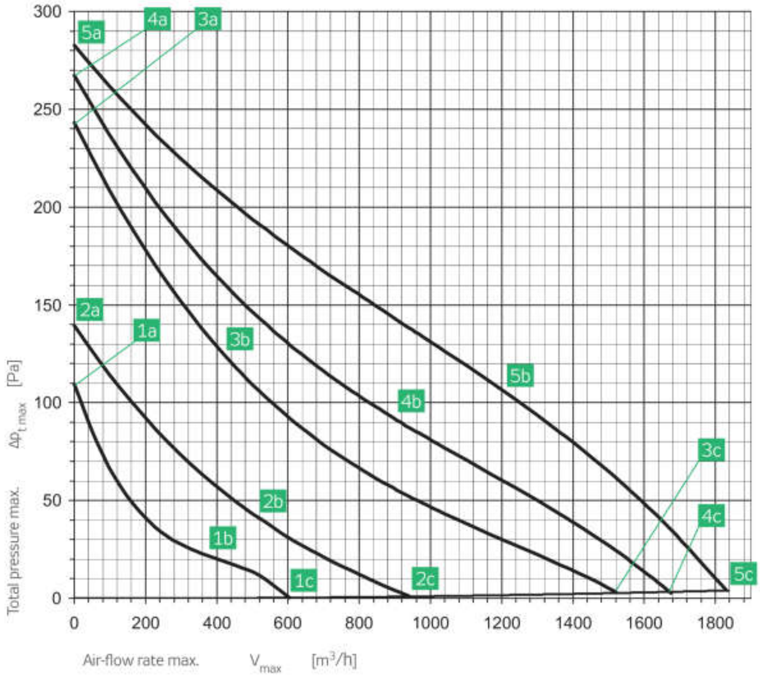
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{MAX}[dB(A)]				
L_{WA}	62	63	68	68
Sound power level L_{WAokt} [dB(A)]				
125 Hz	56	57	61	53
250 Hz	53	53	60	59
500 Hz	56	55	63	63
1000 Hz	56	57	62	63
2000 Hz	52	51	57	59
4000 Hz	51	56	56	58
8000 Hz	44	45	44	44

RF 40/28-4E

Parameters in selected working points	5a	5b	5c	4a	4b	4c	3a	3b	3c	2a	2b	2c	1a	1b	1c
Voltage U [V]		230			180			160			130			105	
Current I [A]	0.48	0.51	0.50	0.36	0.43	0.40	0.35	0.43	0.40	0.36	0.39	0.42	0.37	0.37	0.40
Electric input P [W]	98	112	104	67	80	73	59	72	66	50	54	57	40	40	43
Speed n [min^{-1}]	1380	1341	1358	1324	1250	1290	1286	1188	1231	1156	1106	1042	897	897	728
Air-flow rate V [m^3/h]	0	712	1270	0	707	1203	0	609	1147	0	296	955	0	187	654
Static pressure Δp_s [Pa]	218	122	0	198	99	0	188	97	0	169	104	0	161	73	0
Total pressure Δp_t [Pa]	218	125	9	198	102	8	188	99	7	169	104	5	161	73	2

RF 56/31-4E

ErP 2015 NOT compliant



RF 56/31-4E			
Power supply		230 V	50 Hz
Max. electric input	P_{max}	[W]	138
Max. current (5c)	I_{max}	[A]	0.61
Mean speed	n	[min^{-1}]	1230
Capacitor	C	[µF]	4
Max. working temp.	t_{max}	[°C]	60
Max. air-flow rate	V_{max}	[m³/h]	1837
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	283
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	22
Five-stage controller	type		TRN 2E
Protecting relay	type		STE

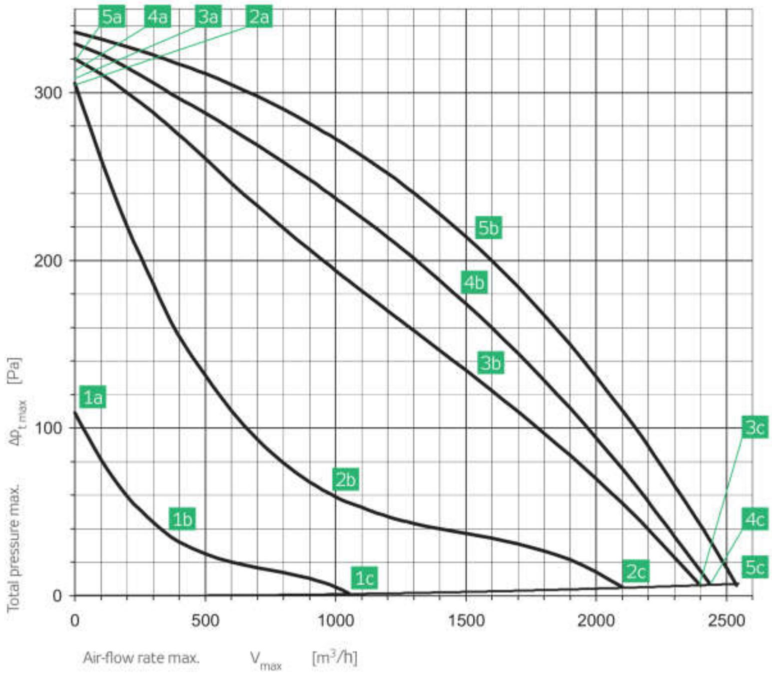
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WA}[dB(A)]				
L_{WA}	70	73	70	74
Sound power level L_{WAokt} [dB(A)]				
125 Hz	57	59	56	58
250 Hz	63	64	64	66
500 Hz	63	65	64	67
1000 Hz	62	63	64	67
2000 Hz	59	60	61	64
4000 Hz	64	70	62	68
8000 Hz	46	52	44	50

RF 56/31-4E

Parameters in selected working points	5a	5b	5c	4a	4b	4c	3a	3b	3c	2a	2b	2c	1a	1b	1c
Voltage U [V]		230			180			160			130			105	
Current I [A]	0.54	0.61	0.54	0.46	0.56	0.47	0.47	0.51	0.48	0.47	0.50	0.49	0.41	0.42	0.42
Electric input P [W]	116	138	119	85	105	90	77	84	81	60	66	65	42	45	44
Speed n [min^{-1}]	1315	1234	1305	1214	1083	1200	1112	1044	1097	850	704	762	630	514	536
Air-flow rate V [m³/h]	0	1215	1837	0	956	1671	0	443	1518	0	505	935	0	362	604
Static pressure Δp_s [Pa]	283	107	0	267	94	0	243	126	0	139	43	0	109	23	0
Total pressure Δp_t [Pa]	283	108	4	267	95	3	243	126	3	139	44	1	109	23	0

RF 56/35-4E

ErP 2015 NOT compliant



RF 56/35-4E			
Power supply		230 V	50 Hz
Max. electric input	P_{max}	[W]	280
Max. current (5c)	I_{max}	[A]	*1,66
Mean speed	n	[min⁻¹]	1370
Capacitor	C	[μF]	6
Max. working temp.	t_{max}	[°C]	60
Max. air-flow rate	V_{max}	[m³/h]	2547
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	336
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	25
Five-stage controller	type		TRN 2E
Protecting relay	type		STE

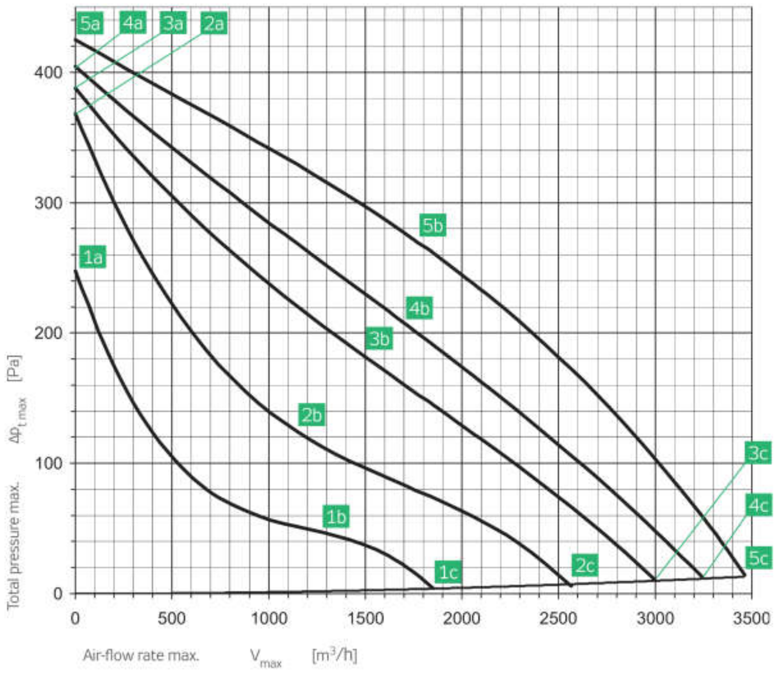
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WA} [dB(A)]				
L_{WA}	71	72	72	74
Sound power level L_{WAokt} [dB(A)]				
125 Hz	54	55	55	56
250 Hz	64	65	65	66
500 Hz	65	65	67	68
1000 Hz	64	63	67	69
2000 Hz	63	61	64	66
4000 Hz	60	63	58	65
8000 Hz	59	65	55	64

RF 56/35-4E

Parameters in selected working points	5a	5b	5c	4a	4b	4c	3a	3b	3c	2a	2b	2c	1a	1b	1c
Voltage U [V]		230			180			160			130			105	
Current I [A]	1.16	1.36	1.19	1.00	1.40	1.06	1.04	*1.53	1.11	1.33	*1.66	1.37	1.40	1.42	1.40
Electric input P [W]	214	280	225	173	237	182	160	229	171	160	185	162	121	123	121
Speed n [min⁻¹]	1405	1368	1399	1362	1278	1350	1326	1180	1308	1123	836	1100	614	564	624
Air-flow rate V [m³/h]	0	1516	2547	0	1463	2441	0	1482	2401	0	1041	2142	0	348	1038
Static pressure Δp_s [Pa]	336	213	0	329	179	0	320	134	0	306	61	0	109	39	0
Total pressure Δp_t [Pa]	336	216	7	329	181	7	320	136	6	306	62	5	109	39	1

RF 56/40-4E

ErP 2015 NOT compliant



RF 56/40-4E

Power supply		230 V	50 Hz
Max. electric input	P_{max}	[W]	415
Max. current (5c)	I_{max}	[A]	1.83
Mean speed	n	[min^{-1}]	1290
Capacitor	C	[μF]	10
Max. working temp.	t_{max}	[°C]	60
Max. air-flow rate	V_{max}	[m³/h]	3458
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	425
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	27
Five-stage controller	type		TRN 2E
Protecting relay	type		STE

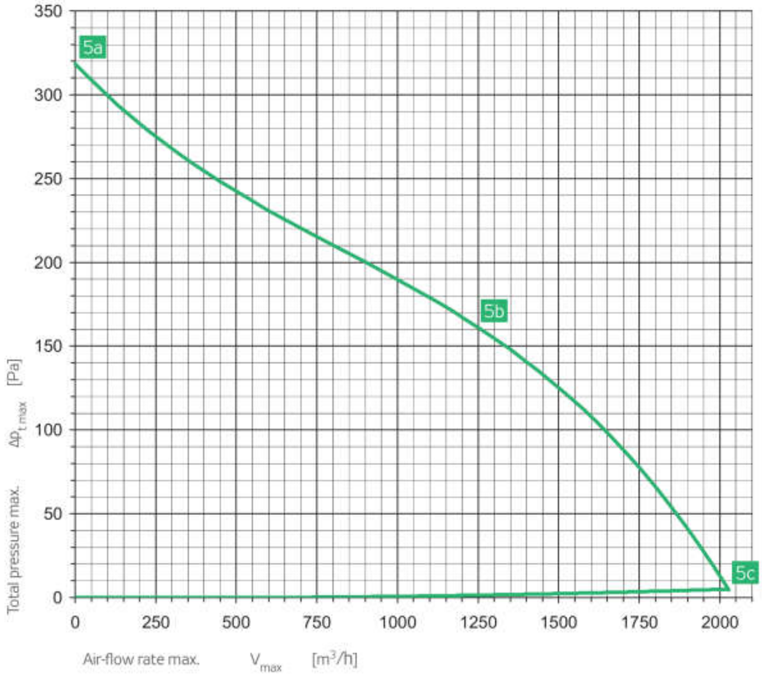
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WA} [dB(A)]				
L_{WA}	72	74	74	77
Sound power level L_{WAokt} [dB(A)]				
125 Hz	58	59	60	65
250 Hz	66	67	65	69
500 Hz	65	68	69	71
1000 Hz	65	65	69	70
2000 Hz	64	63	66	68
4000 Hz	60	64	61	65
8000 Hz	63	67	59	67

RF 56/40-4E

Parameters in selected working points	5a	5b	5c	4a	4b	4c	3a	3b	3c	2a	2b	2c	1a	1b	1c
Voltage U [V]		230			180			160			130			105	
Current I [A]	1.41	1.83	1.61	1.36	1.89	1.65	1.41	1.92	1.70	1.47	1.87	1.73	1.59	1.70	1.65
Electric input P [W]	307	415	358	250	343	300	229	307	275	195	240	224	163	172	169
Speed n [min^{-1}]	1361	1289	1324	1292	1164	1226	1239	1068	1149	1116	891	983	788	682	734
Air-flow rate V [m³/h]	0	1763	3458	0	1670	3248	0	1477	3003	0	1135	2565	0	1281	1852
Static pressure Δp_s [Pa]	425	268	0	404	209	0	388	180	0	368	127	0	248	47	0
Total pressure Δp_t [Pa]	425	272	13	404	212	12	388	183	10	368	129	7	248	48	4

RF 56/31-4D

ErP 2015



RF 56/31-4D			
Power supply	Y	3× 400 V	50 Hz
Max. electric input	P_{max}	[W]	177
Max. current (5c)	I_{max}	[A]	0.36
Mean speed	n	[min^{-1}]	1390
Capacitor	C	[μF]	–
Max. working temp.	t_{max}	[°C]	40
Max. air-flow rate	V_{max}	[m^3/h]	2044
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	318
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	25
Five-stage controller	type		FM 0,37 kW
Protecting relay	type		STD

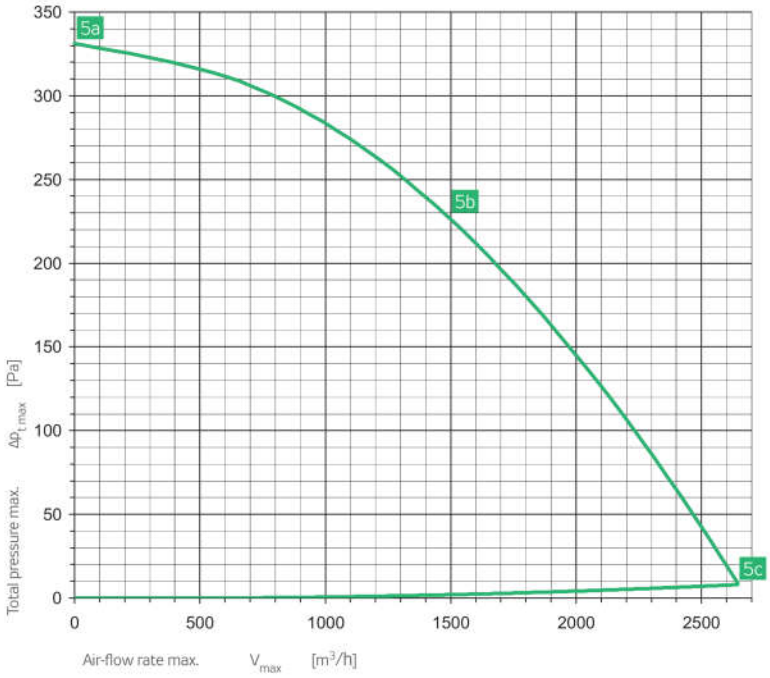
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WA} [dB(A)]				
L_{WA}	68	69	71	72
Sound power level L_{WAokt} [dB(A)]				
125 Hz	51	50	49	52
250 Hz	60	62	60	64
500 Hz	62	62	66	67
1000 Hz	60	59	65	65
2000 Hz	57	57	62	62
4000 Hz	62	64	62	65
8000 Hz	56	61	53	60

RF 56/31-4D

Parameters in selected working points	5a	5b	5c
Voltage U [V]		400	
Current I [A]	0.34	0.36	0.33
Electric input P [W]	159	177	135
Speed n [min^{-1}]	1404	1386	1415
Air-flow rate V [m^3/h]	0	1241	2044
Static pressure Δp_s [Pa]	318	164	0
Total pressure Δp_t [Pa]	318	166	5

RF 56/35-4D

ErP 2015



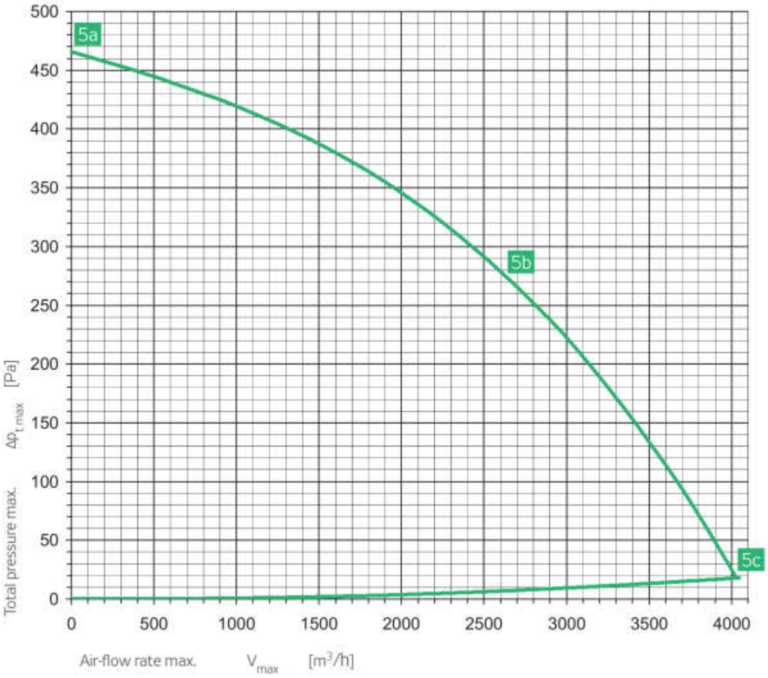
RF 56/35-4D			
Power supply	Y	3× 400 V	50 Hz
Max. electric input	P_{max}	[W]	288
Max. current (5c)	I_{max}	[A]	0.66
Mean speed	n	[min^{-1}]	1410
Capacitor	C	[µF]	–
Max. working temp.	t_{max}	[°C]	40
Max. air-flow rate	V_{max}	[m^3/h]	2681
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	331
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	26
Five-stage controller	type		FM 0,37 kW
Protecting relay	type		STD

	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WA} [dB(A)]				
L_{WA}	71	71	74	75
Sound power level L_{WAokt} [dB(A)]				
125 Hz	56	59	60	59
250 Hz	64	65	65	65
500 Hz	66	66	70	70
1000 Hz	65	63	69	69
2000 Hz	63	61	65	66
4000 Hz	59	63	58	65
8000 Hz	56	61	50	59

RF 56/35-4D

Parameters in selected working points	5a	5b	5c
Voltage U [V]		400	
Current I [A]	0.62	0.66	0.62
Electric input P [W]	212	288	223
Speed n [min^{-1}]	1436	1414	1433
Air-flow rate V [m^3/h]	0	1507	2681
Static pressure Δp_s [Pa]	331	227	0
Total pressure Δp_t [Pa]	331	229	8

RF 56/40-4D



ErP 2015

RF 56/40-4D

Power supply	Y	3 × 400 V	50 Hz
Max. electric input	P_{max}	[W]	592
Max. current (5c)	I_{max}	[A]	1.27
Mean speed	n	[min^{-1}]	1420
Capacitor	C	[μF]	–
Max. working temp.	t_{max}	[°C]	40
Max. air-flow rate	V_{max}	[m³/h]	4047
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	466
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	30
Five-stage controller	type		FM 0,75 kW
Protecting relay	type		STD

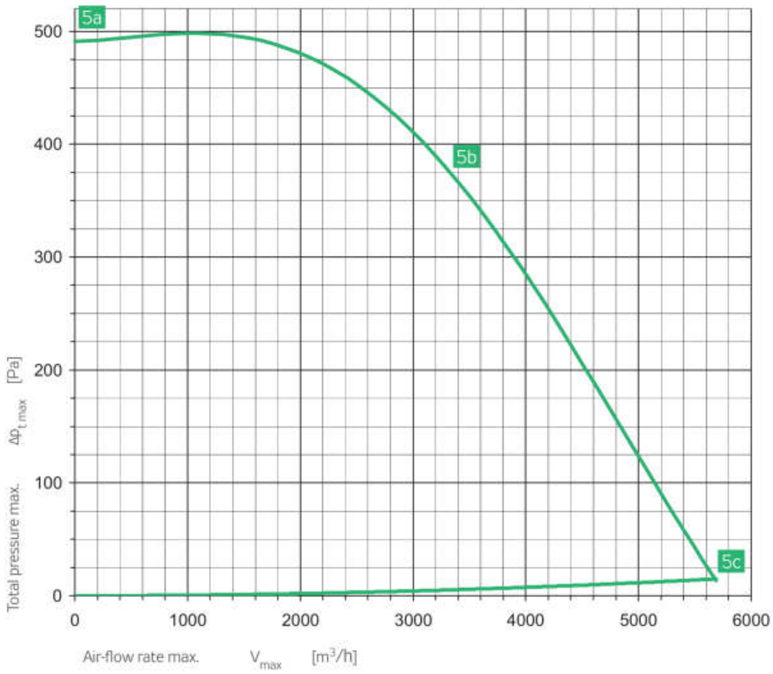
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{MAX} [dB(A)]				
L_{WA}	74	75	77	79
Sound power level L_{WAokt} [dB(A)]				
125 Hz	61	60	64	61
250 Hz	64	68	68	71
500 Hz	69	70	72	73
1000 Hz	67	67	71	73
2000 Hz	67	64	69	70
4000 Hz	62	64	63	68
8000 Hz	63	68	62	70

RF 56/40-4D

Parameters in selected working points	5a	5b	5c
Voltage U [V]		400	
Current I [A]	1.23	1.27	1.17
Electric input P [W]	553	592	478
Speed n [min^{-1}]	1423	1418	1434
Air-flow rate V [m³/h]	0	2591	4047
Static pressure Δp_s [Pa]	466	275	0
Total pressure Δp_t [Pa]	466	282	18

RF 71/45-4D

ErP 2015



RF 71/45-4D

Power supply	Y	3× 400 V	50 Hz
Max. electric input	P_{max}	[W]	924
Max. current (5c)	I_{max}	[A]	1.87
Mean speed	n	[min⁻¹]	1410
Capacitor	C	[μF]	–
Max. working temp.	t_{max}	[°C]	40
Max. air-flow rate	V_{max}	[m³/h]	5691
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	498
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	40
Five-stage controller	type		FM 0,75 kjW
Protecting relay	type		STD

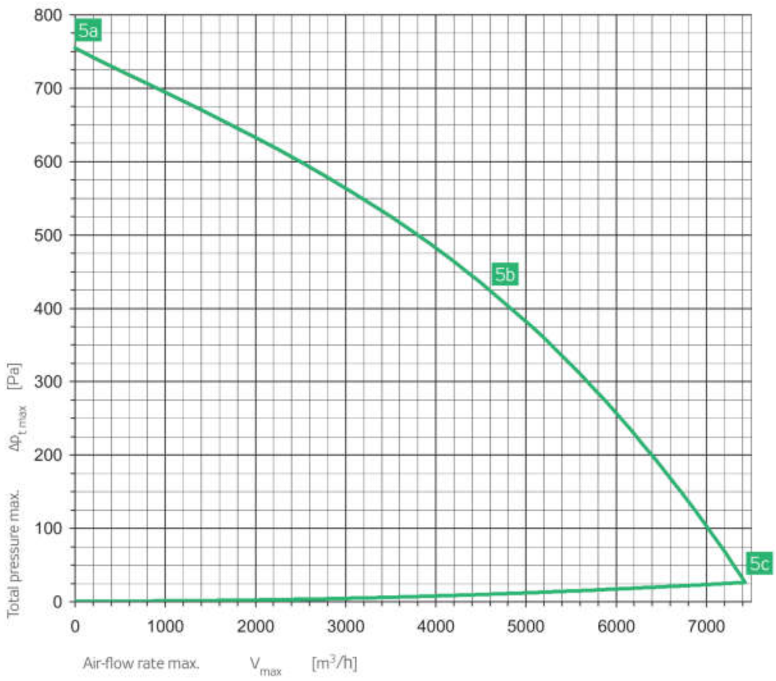
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WAX} [dB(A)]				
L_{WA}	80	82	80	84
Sound power level L_{WAokt} [dB(A)]				
125 Hz	67	67	64	66
250 Hz	72	75	72	76
500 Hz	74	77	75	79
1000 Hz	74	74	75	78
2000 Hz	73	72	71	74
4000 Hz	68	69	67	72
8000 Hz	68	75	63	71

RF 71/45-4D

Parameters in selected working points	5a	5b	5c
Voltage U [V]		400	
Current I [A]	1.58	1.87	1.67
Electric input P [W]	606	924	711
Speed n [min⁻¹]	1434	1405	1425
Air-flow rate V [m³/h]	0	3233	5691
Static pressure Δp_s [Pa]	491	380	0
Total pressure Δp_t [Pa]	491	385	15

RF 71/50-4D

ErP 2015



RF 71/50-4D

Power supply	Y	3 × 400 V	50 Hz
Max. electric input	P_{max}	[W]	1399
Max. current (5c)	I_{max}	[A]	2.73
Mean speed	n	[min^{-1}]	1390
Capacitor	C	[μF]	–
Max. working temp.	t_{max}	[°C]	40
Max. air-flow rate	V_{max}	[m³/h]	7431
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	754
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	43
Five-stage controller	type		FM 1,5 kW
Protecting relay	type		STD

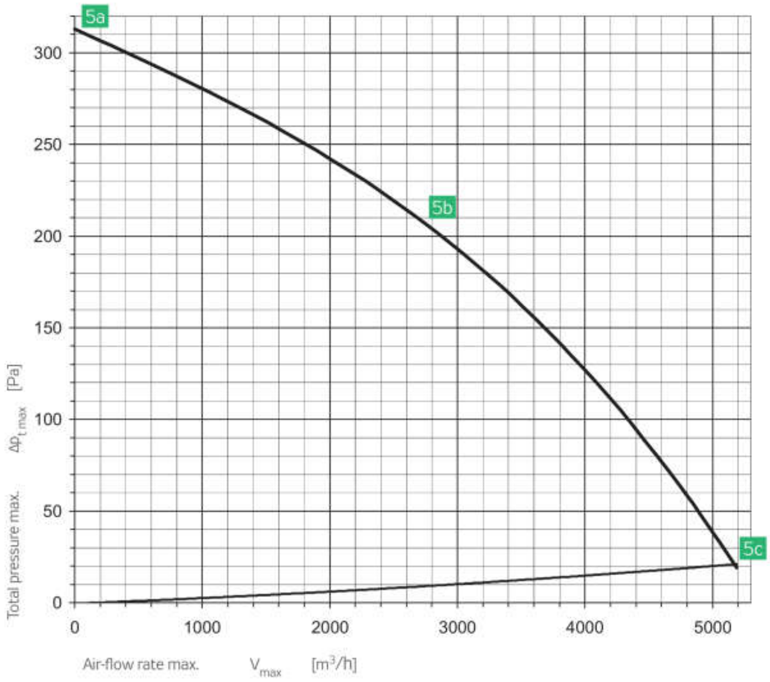
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WA} [dB(A)]				
L_{WA}	81	82	84	86
Sound power level L_{WAokt} [dB(A)]				
125 Hz	66	70	69	71
250 Hz	76	77	76	79
500 Hz	75	76	79	81
1000 Hz	75	74	79	81
2000 Hz	72	71	76	78
4000 Hz	68	70	72	76
8000 Hz	64	69	64	69

RF 71/50-4D

Parameters in selected working points	5a	5b	5c
Voltage U [V]		400	
Current I [A]	2.25	2.73	2.57
Electric input P [W]	889	1399	1244
Speed n [min^{-1}]	1427	1387	1400
Air-flow rate V [m³/h]	0	4454	7431
Static pressure Δp_s [Pa]	754	426	0
Total pressure Δp_t [Pa]	754	435	26

RF 71/50-6D

ErP 2015 NOT compliant



RF 71/50-6D			
Power supply	Y	3× 400 V	50 Hz
Max. electric input	P_{max}	[W]	475
Max. current (5c)	I_{max}	[A]	1.15
Mean speed	n	[min^{-1}]	930
Capacitor	C	[μF]	–
Max. working temp.	t_{max}	[°C]	40
Max. air-flow rate	V_{max}	[m³/h]	5125
Max. total pressure	$Δp_{t\,max}$	[Pa]	313
Min. static pressure (5c)	$Δp_{s\,min}$	[Pa]	0
Weight	m	[kg]	40
Five-stage controller	type		FM 0,37 kW
Protecting relay	type		STD

	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WAX} [dB(A)]				
L_{WA}	72	75	72	75
Sound power level L_{WAokt} [dB(A)]				
125 Hz	62	57	55	64
250 Hz	65	63	64	66
500 Hz	65	66	66	69
1000 Hz	61	69	67	68
2000 Hz	62	70	64	67
4000 Hz	66	65	58	67
8000 Hz	55	56	49	56

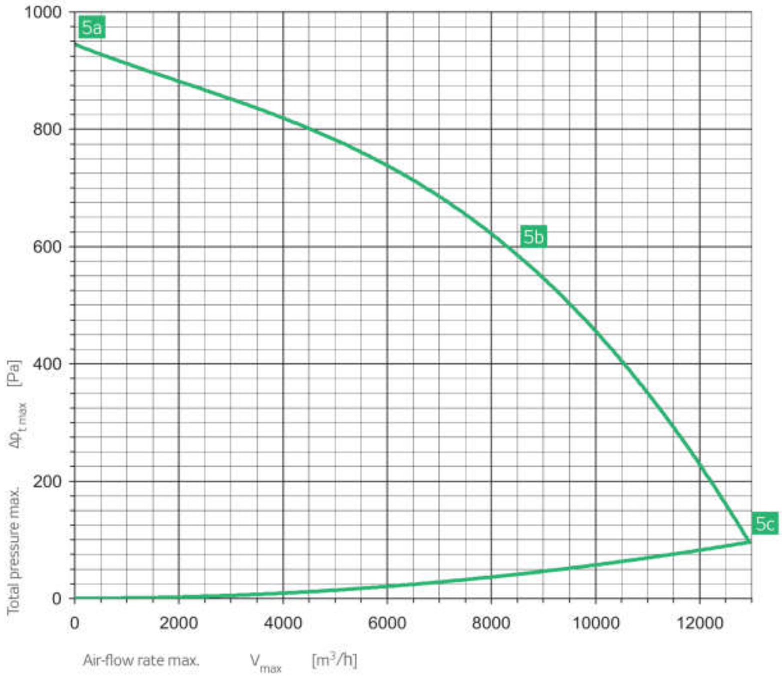
RF 71/50-6D

Parameters in selected working points	5a	5b	5c
Voltage U [V]		400	
Current I [A]	1.05	1.15	1.08
Electric input P [W]	323	475	399
Speed n [min^{-1}]	953	929	941
Air-flow rate V [m³/h]	0	2823	5125
Static pressure $Δp_s$ [Pa]	313	201	0
Total pressure $Δp_t$ [Pa]	313	210	19

Fans RP
Fans RQ
Fans RO
Fans RE
Fans RF
Fans RPH
Fans EX
Controllers ...

RF 100/56-4D

ErP 2015



RF 100/56-4D			
Power supply	Y	3 × 400 V	50 Hz
Max. electric input	P_{max}	[W]	2568
Max. current (5c)	I_{max}	[A]	4.80
Mean speed	n	[min⁻¹]	1440
Capacitor	C	[μF]	–
Max. working temp.	t_{max}	[°C]	40
Max. air-flow rate	V_{max}	[m³/h]	12956
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	945
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	125
Five-stage controller	type		FM 2,2 kW
Protecting relay	type		STD

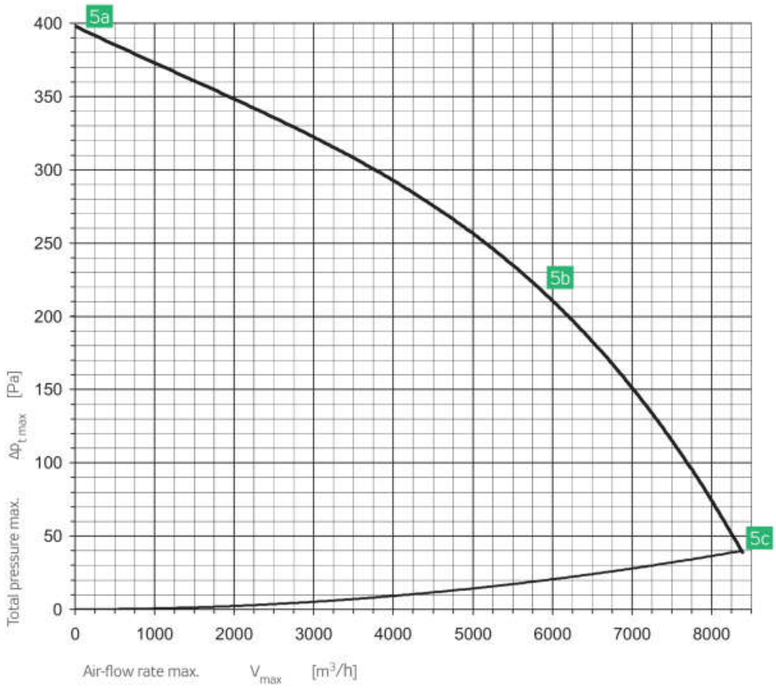
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WA} [dB(A)]				
L_{WA}	78	84	83	89
Sound power level L_{WAokt} [dB(A)]				
125 Hz	69	68	72	76
250 Hz	72	79	72	79
500 Hz	72	77	78	83
1000 Hz	71	76	77	82
2000 Hz	70	76	74	81
4000 Hz	68	77	72	81
8000 Hz	63	72	65	72

RF 100/56-4D

Parameters in selected working points	5a	5b	5c
Voltage U [V]	400		
Current I [A]	3.60	4.80	4.00
Electric input P [W]	1526	2568	1845
Speed n [min⁻¹]	1461	1435	1459
Air-flow rate V [m³/h]	0	8480	12956
Static pressure Δp_s [Pa]	945	550	0
Total pressure Δp_t [Pa]	945	591	96

RF 100/56-6D

ErP 2015 NOT compliant



RF 100/56-6D			
Power supply	Y	3× 400 V	50 Hz
Max. electric input	P_{max}	[W]	781
Max. current (5c)	I_{max}	[A]	1.70
Mean speed	n	[min⁻¹]	910
Capacitor	C	[μF]	–
Max. working temp.	t_{max}	[°C]	40
Max. air-flow rate	V_{max}	[m³/h]	8387
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	398
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	115
Five-stage controller	type		FM 0,75 kW
Protecting relay	type		STD

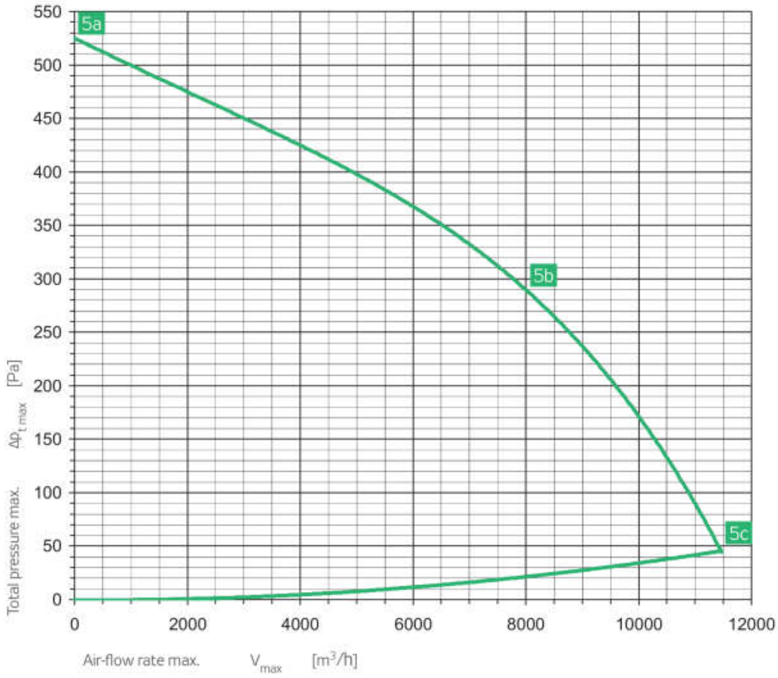
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WA} [dB(A)]				
L_{WA}	66	74	66	74
Sound power level L_{WAokt} [dB(A)]				
125 Hz	52	59	52	59
250 Hz	57	67	57	67
500 Hz	64	66	64	66
1000 Hz	55	64	55	64
2000 Hz	54	66	54	66
4000 Hz	53	62	53	62
8000 Hz	35	69	35	69

RF 100/56-6D

Parameters in selected working points	5a	5b	5c
Voltage U [V]		400	
Current I [A]	1.40	1.70	1.50
Electric input P [W]	524	778	585
Speed n [min⁻¹]	947	911	942
Air-flow rate V [m³/h]	0	5830	8387
Static pressure Δp_s [Pa]	398	201	0
Total pressure Δp_t [Pa]	398	221	40

RF 100/63-6D

ErP 2015



RF 100/63-6D

Power supply	Y	3 × 400 V	50 Hz
Max. elecric input	P_{max}	[W]	1400
Max. current (5c)	I_{max}	[A]	3.10
Mean speed	n	[min⁻¹]	930
Capacitor	C	[μF]	–
Max. working temp.	t_{max}	[°C]	40
Max. air-flow rate	V_{max}	[m³/h]	11469
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	525
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	117
Five-stage controller	type		FM 1,5 kW
Protecting relay	type		STD

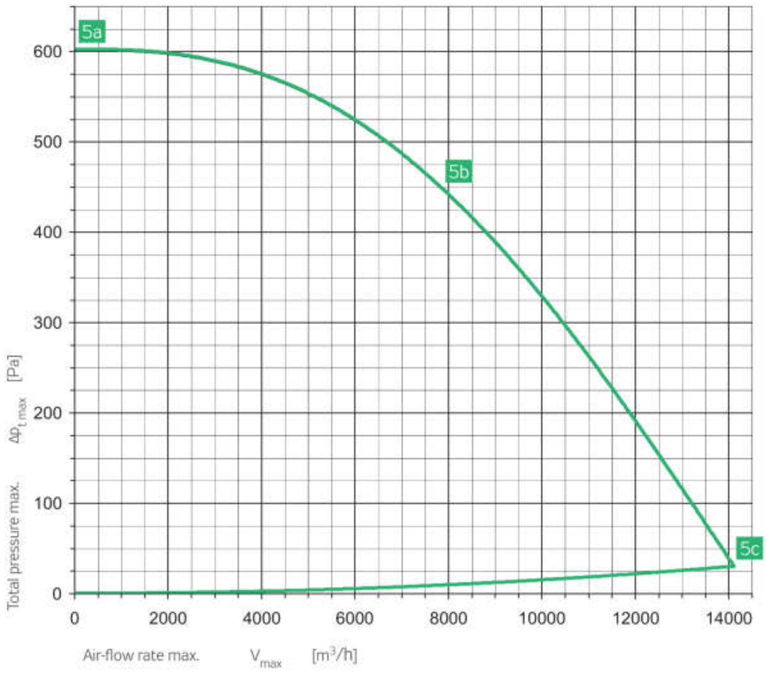
	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{WA} [dB(A)]				
L_{WA}	74	78	80	82
Sound power level L_{WAokt} [dB(A)]				
125 Hz	60	63	64	67
250 Hz	64	72	66	72
500 Hz	72	71	78	77
1000 Hz	66	69	71	74
2000 Hz	64	71	69	75
4000 Hz	58	64	63	70
8000 Hz	61	71	61	70

RF 100/63-6D

Parameters in selected working points	5a	5b	5c
Voltage U [V]		400	
Current I [A]	2.60	3.10	2.80
Electric input P [W]	831	1400	1081
Speed n [min⁻¹]	964	932	952
Air-flow rate V [m³/h]	0	7643	11469
Static pressure Δp_s [Pa]	525	279	0
Total pressure Δp_t [Pa]	525	290	46

RF 100/71-6D

ErP 2015



RF 100/71-6D

Power supply	Y	3× 400 V	50 Hz
Max. electric input	P_{max}	[W]	2239
Max. current (5c)	I_{max}	[A]	4.50
Mean speed	n	[min^{-1}]	950
Capacitor	C	[μF]	–
Max. working temp.	t_{max}	[°C]	40
Max. air-flow rate	V_{max}	[m^3/h]	14112
Max. total pressure	$\Delta p_{t\,max}$	[Pa]	602
Min. static pressure (5c)	$\Delta p_{s\,min}$	[Pa]	0
Weight	m	[kg]	135
Five-stage controller	type		FM 2,2 kW
Protecting relay	type		STD

	Inlet		Outlet	
Point	5b	5c	5b	5c
Total sound power level L_{MAX} [dB(A)]				
L_{WA}	83	87	87	90
Sound power level L_{WAokt} [dB(A)]				
125 Hz	67	70	70	72
250 Hz	72	76	75	78
500 Hz	78	77	83	82
1000 Hz	75	78	80	81
2000 Hz	75	83	80	87
4000 Hz	75	77	78	78
8000 Hz	67	79	71	77

RF 100/71-6D

Parameters in selected working points	5a	5b	5c
Voltage U [V]		400	
Current I [A]	3.40	4.50	4.10
Electric input P [W]	1273	2212	1910
Speed n [min^{-1}]	977	953	960
Air-flow rate V [m^3/h]	0	7643	14112
Static pressure Δp_s [Pa]	602	453	0
Total pressure Δp_t [Pa]	602	462	17

Fans RP
Fans RQ
Fans RO
Fans RE
Fans RF
Fans RPH
Fans EX
Controllers ...

INSTALLATION

- RF fans (including other Vento system elements and equipment) are not intended, due to their concept, for direct sale to end customers. Each installation must be performed in accordance with a professional project created by a qualified air-handling designer who is responsible for proper selection of the fan. Installation and commissioning may only be performed by an authorized company licensed in accordance with generally valid regulations.
- RF fans can only work in the horizontal position (i.e. the impeller rotation axis is in the vertical position). They can only be transported in the horizontal position.
- It is recommended to install the fan on a roof adaptor. A self-acting pressure damper connected to the fan intake prevents air backdraught.
- Free air flow on the cold parts of the fan can cause condensation and dripping it down.
- Roof fans may only be placed on a fixed weatherproof (according installation site conditions) structure, suitable to transfer the weight of the fan.
- Fan can suck the evacuated air mass freely from space or can be connected to the ductwork. Connected piping must not be suspended from the fan, otherwise it may deform the fan base. To connect the pipe to the fan use DV elastic connection.

WIRING

- The wiring can only be performed by a qualified worker licensed in accordance with valid regulations.
- **Terminal box:**
  a) With single-phase motors, the wiring is terminated in the terminal box, degree of protection IP 54. Wago terminals are used for single-phase motors.
  b) The three-phase motor terminal box is situated on the motor body. Connection is made using screw terminals.
- All terminal boxes are equipped with plastic bushings.
- Observe the motor wiring diagrams (figure 3).
- Check whether the motor is controlled by a frequency converter. The type of frequency inverter connection to the motor, 3× 400 V –Y or 3x 230 V- Δ, is included in table # 2. Three-phase motors are always connected for 3× 400V - Y voltage in the factory; if the fan is controlled using a 3× 230 V - Δ frequency inverter (motor outputs up to 0.75 kW) it is necessary to reconnect the terminal box on the motor for delta connection! The wiring cables are led into the terminal box through the tube which is routed through the fan and roof adaptor interior into the ventilated room. The power supply cable and thermal protection cable must be led separately.
- If the fan is controlled using electronic components (e.g. PE controllers or a frequency inverter), it is necessary to eliminate electromagnetic interference (EMC). To connect the fan to the frequency inverter, use the specified shielded cable.

FIGURE 3 – Y/Δ CONNECTION IN THE THREE-PHASE MOTOR TERMINAL BOX WITH FREQUENCY INVERTER, IP 21 (RFFMIMXXXX20)

*) frequency converter is delivered as a standard accessory, see Table # 3.

→ The inverters are equipped with a built-in EMI filters, however, if used it is necessary to assess the area of electromagnetic interference (EMC compatibility) in a complex situation at the injection site (affects the final installation, co-devices).

FIGURE 4 – Y/Δ CONNECTION IN THE THREE-PHASE MOTOR TERMINAL BOX WITH FREQUENCY INVERTER, P54 (RFFMIBXXXX50)

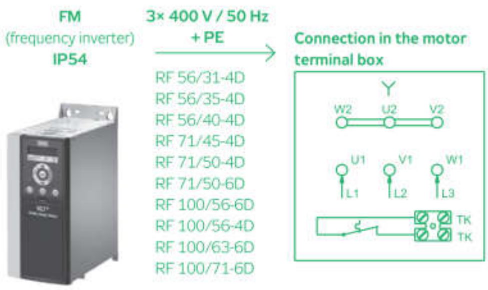
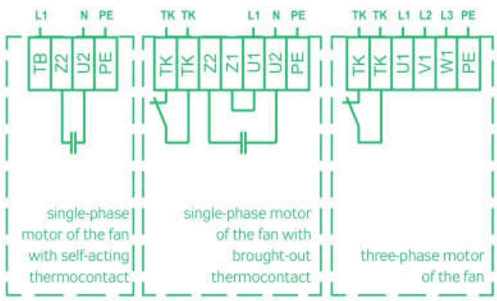


FIGURE 5 – RF FAN WIRING DIAGRAM



TB
single-phase motor power supply terminals 230 V / 50 Hz

TK
– motor thermo-contact terminals

U1, U2
– single-phase motor power supply terminals 230 V / 50Hz

PE
– protective conductor terminal

TK
– motor thermo-contact terminals

U1, V1, W1
– three-phase motor power supply terminals 400 V / 50 Hz

PE
– protective conductor terminal

The wiring diagrams with front-end elements (protective relays, controllers, control units) are included in the installation manual, respectively in the AeroCAD project.

Fans RP
Fans RQ
Fans RO
Fans RE
Fans RF
Fans RPH
Fans EX
Controllers ...

On the following pages you will find some basic examples of the fan connection to output controllers and control units. AeroCAD software is available for precise design of the wiring.

EXAMPLES, RF FANS

Fans RP
Fans RQ
Fans RO
Fans RE
Fans RF
Fans RPH
Fans EX
Controllers ...

EXAMPLE A

RF FANS WITHOUT OUTPUT CONTROL

Application of the RF fan in a simple air-handling assembly (separately) without output control, operation ON/OFF.

This connection ensures:

- Internal ❶ or standard ❷ thermal protection of the fan
- Manual switching on/off of the fan using the switch or STE(D) protecting relay.

❶

RF 40/19-2E, RF 40/22-2E, RF 40/25-2E, RF 40/28-4E, RF 56/31-4E

❷

RF 56/31-4D, RF 56/35-4E, RF 56/35-4D, RF 56/40-4E, RF 56/40-4D, RF 71/xx, RF 100/xx

EXAMPLE B

RF FANS WITH SINGLE-PHASE MOTOR AND OUTPUT CONTROL USING PE CONTROLLERS

It is same as the previous example plus electronic controller inserted into the power supply. The PE controller enables the fan to be switched off.

This connection ensures:

- Internal ❶ or standard ❷ thermal protection of the fan
- Manual switching on/off of the fan using the PE controller or STE(D) protecting relay.

The number behind the PE controller indicates the value of max. permissible current load, which must be lower than the value of the fan motor current.

❶

RF 40/19-2E, RF 40/22-2E, RF 40/25-2E, RF 40/28-4E, RF 56/31-4E

❷

RF 56/35-4E, RF 56/40-4E

FIGURE 6 – FAN CONNECTION

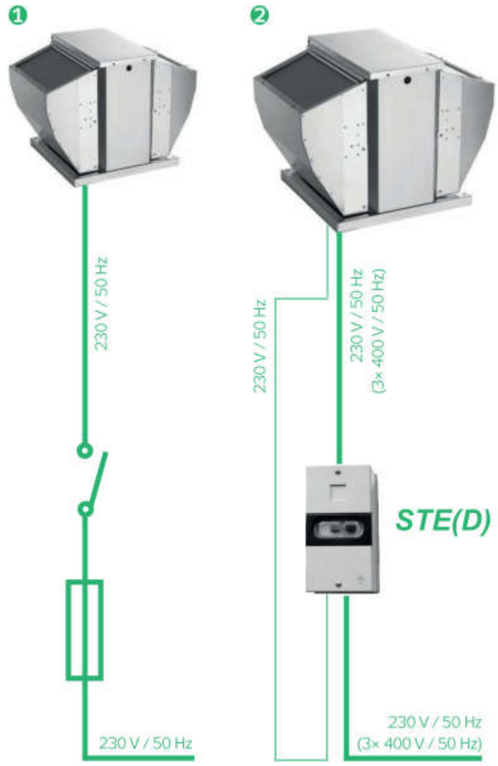
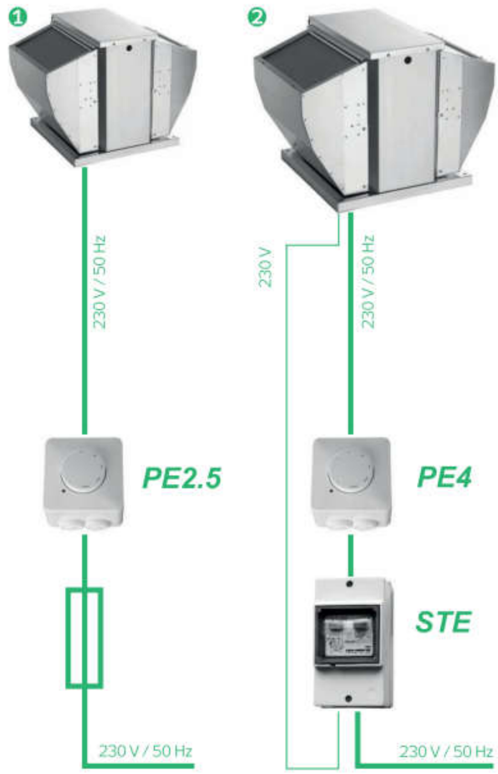


FIGURE 7 – FAN CONNECTION



EXAMPLE C

RF FANS WITH SINGLE-PHASE MOTOR
AND OUTPUT CONTROLLER

An RF fan connection in more sophisticated venting systems using the control unit is shown in figure # 8. This connection ensures:

- The possibility of fan output selection within the stage range 1–5.
- Internal ❶ or standard ❷ thermal protection
- Fan switching on/off manually by the ORe5 remote controller.
- Fan switching on/off externally by any other switch (such as room thermostat, gas detector, hygrostat, etc.) on terminals PT1, PT2 (for more information, refer to the separate TRN controller operating instructions)

When controlled by the ORe 5 controller along with an external switch, the operation signalling on the ORe5 controller may not correspond to the actual status of the fan. The fan operation, respectively corresponding speed stage indicator will always come on upon the fan operation request. The fan operation is conditioned by this option and the simultaneously switched external switch. If the function of the external switch is not used, it will be necessary to interconnect terminals PT1 and PT2. If the fan is overloaded, the fan circuit will be disconnected due to overheating of the motor winding, and the failure will be signalled by the red indicator on the ORe 5 controller. After cooling down, the motor is not automatically restarted. To restart the fan, it is first necessary to set the „STOP" position using the selecting button, and thus confirm failure removal, and then to set the required fan output. In this arrangement, the option „STOP" on ORe5 controller must not be blocked. The TRN and ORe 5 controllers can be replaced by the TRR controller with a front-end STE controller. TRR controllers are equipped with motor protection.

❶

RF 40/19-2E, RF 40/22-2E, RF 40/25-2E, RF 40/28-4E, RF 56/31-4E

❷

RF 56/35-4E, RF 56/40-4E

EXAMPLE D

RF FANS WITH A THREE-PHASE MOTOR
AND A FREQUENCY INVERTER

An assembly of the RF fan with frequency inverter is shown in figure # 9. An internal controller is installed in the control unit during production.
This connection ensures:

- The possibility of fan output selection within the stage range 1–5.
- Over-current protection of the fan
- Fan switching on/off manually by the ORe5 remote controller.
- Fan switching on/off externally by any other switch (such as room thermostat, gas detector, hygrostat, etc.)

❶ Single-phase frequency converter with the 3× 230V/50Hz output.

❷ Three-phase frequency converter with the 3× 400V/50Hz output

When controlled by the ORe 5 controller along with an external switch, the operation signalling on the ORe 5 controller may not correspond to the actual status of the fan. The fan operation, respectively corresponding speed stage indicator will always come on upon the fan operation request. The fan operation is conditioned by this option and the simultaneously switched external switch. If the fan is overloaded, the frequency converter will disconnect the fan supply circuit due to change in the current uptake, and the failure will be signalled on the frequency converter. The failure will also be signalled by the red indicator on the ORe 5 controller. After cooling down, the motor is not automatically started. The failure removal must be confirmed on the frequency converter to enable fan restart.

❶

RF 56/31-4D, RF 56/35-4D, RF 56/40-4D, RF 71/45-4D, RF 71/50-6D, RF 100/56-6D

❷

RF 100/56-4D, RF 100/71-6D, RF 71/50-4D, RF 100/63-6D

FIGURE 8 – FAN CONNECTION

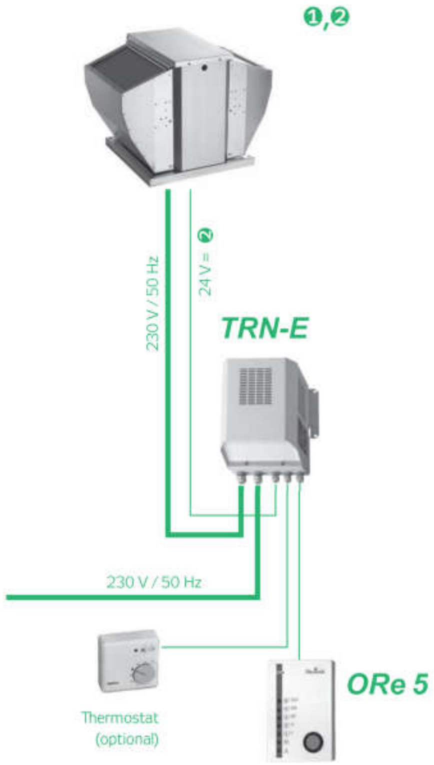
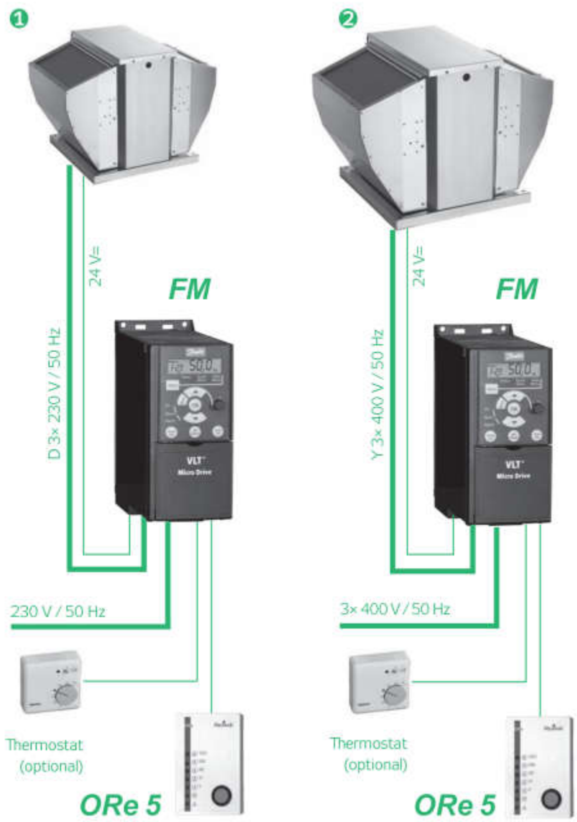


FIGURE 9 – FAN CONNECTION



EXAMPLE E

RF FAN WITHOUT OUTPUT CONTROL
AND WITH CONTROL UNIT

Application of the RF fan as an exhaust fan in a sophisticated air-handling assembly. The inlet branch is not displayed.

This connection ensures:

→ Full thermal protection of the fan
→ Fan switching on/off manually/automatically by the control unit (or its external switch) in conjunction with the inlet fan.

The air-handling assembly can be started by the control unit, manually or automatically following the program.
The protection of motors equipped with TK contacts must always be ensured by the control unit while TK, TK thermo-contact terminals are connected to terminals in the control unit.
Fans of smaller size are protected against overloading by thermo-contacts connected in series with the power supply.
If the motor overheats, the thermo-contacts automatically disconnect the power supply circuit of the motor winding. After cooling down, the contacts will close and the fan starts up automatically.

EXAMPLE F

RF FAN WITH SINGLE-PHASE MOTOR,
OUTPUT CONTROLLER AND CONTROL UNIT

Application of the RF fan as an exhaust fan in a sophisticated air-handling assembly. The inlet branch is not displayed.

This connection ensures:

→ Manual selection of the fan output within the stage range 1–5.
→ Thermal protection of the fan (by connecting the TK thermo-contact terminals to terminals in the control unit).
→ Fan switching on/off manually or automatically, and switching on of the entire assembly by the control unit (or its external switch) in conjunction with the inlet fan.

In this connection, all additional functions of the controller must always be blocked by interconnecting the PT2 and E48 terminals in the TRN controller.

FIGURE 10 – FAN CONNECTION

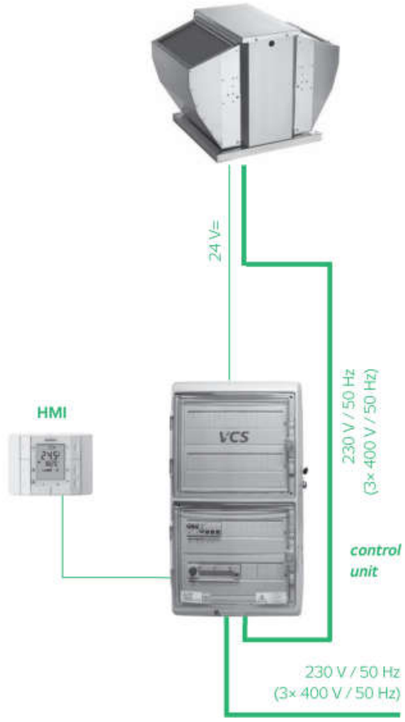
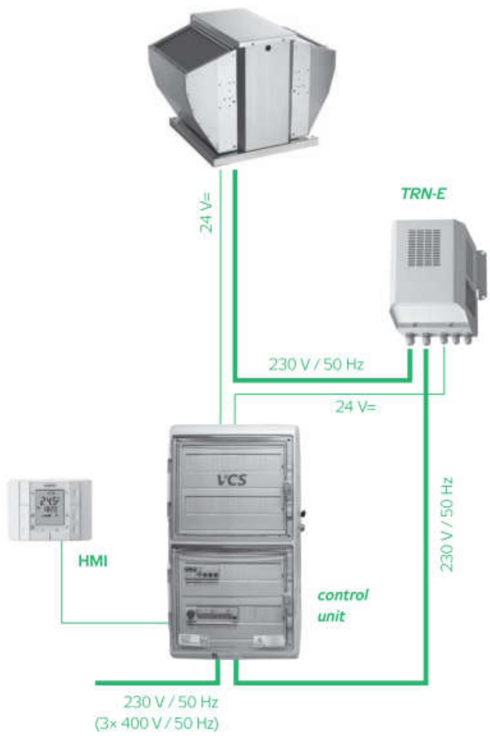


FIGURE 11 – FAN CONNECTION



EXAMPLE G

RF FAN WITH THREE-PHASE MOTOR, OUTPUT CONTROLLER AND CONTROL UNIT

Application of the RF fan as an exhaust fan in a sophisticated air-handling assembly. The inlet branch is not displayed. This connection ensures:

- Manual selection of the fan output within the stage range 1–5.
- Thermal protection of the fan (by connecting the TK thermo-contact terminals to terminals in the control unit).
- Fan switching on/off manually or automatically, and switching on of the entire assembly by the control unit.

All protection and safety functions of the fans as well as the entire system are ensured by the control unit.

(Figure 11)

❶

RF 56/31-4D, RF 56/35-4D, RF 56/40-4D, RF 71/45-4D, RF 71/50-6D, RF 100/56-6D

❷

RF 100/56-4D, RF 100/71-6D, RF 71/50-4D, RF 100/63-6D

EXAMPLE H

RF FAN WITH AUTOMATIC OUTPUT CONTROL, TRN CONTROLLER AND OSX CONTROL UNIT

An assembly of RF fans with TRN controllers and a common OSX unit is shown in figure # 13. The fans are controlled always at the same power level.
This connection ensures:

- Automatic switching on/off of the fan at the selected value of input control voltage (some OSX types only).
- Manual switching on/off of the fan from the OSX unit.
- Fan switching on/off by the „external switching" function (not included in the figure).
- Automatic selection of the fan output stage 1–5 depending on a physical quantity which is read by the sensor equipped with a unified analogue output (signal source of 0–10 V).
- Manual start-up of the system at the preset output stage via the „MANUAL" button. The factory default setting of the OSX controller enables start of the assembly at full output using the „MANUAL" button.
- Thermal protection of the fans (ensured by the TK contacts and controllers)

The OSX unit evaluates signal coming from a converter (signal source), and automatically switches stages 0–5 of the controller. Thermal or pressure converter(s), converters for the measurement of relative or absolute humidity, concentration of gases or vapours, sensors of air quality and many other converters of different physical quantities which provide output signal 0–10 V can be used as sources of the control signal.
For detailed information on the OSX unit, refer to the applicable documentation.

FIGURE 12 – FAN CONNECTION

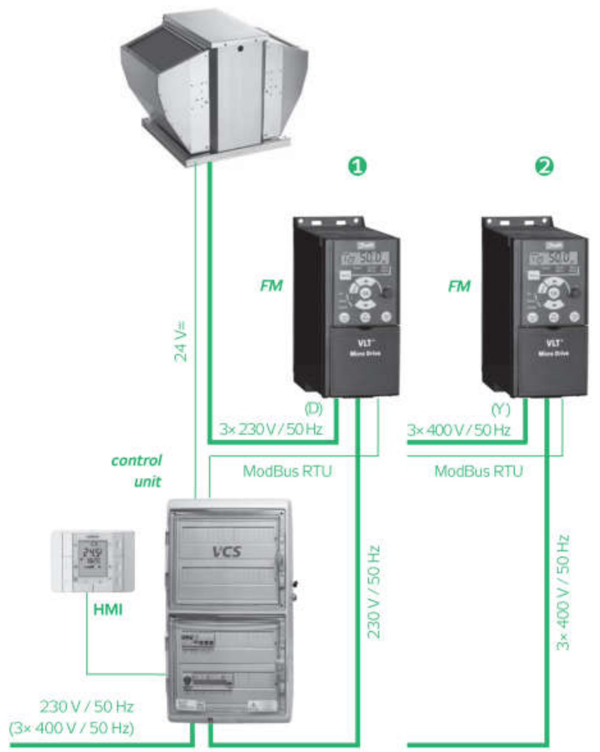
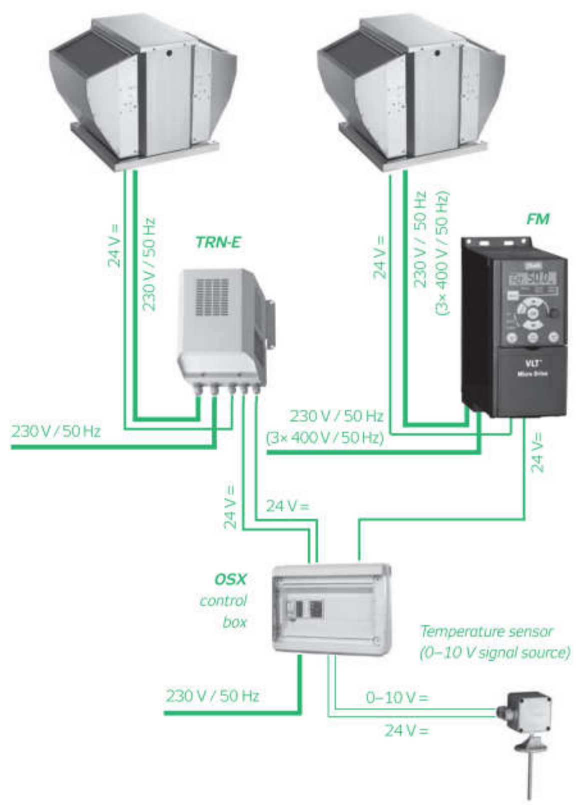


FIGURE 13 – FAN CONNECTION



NK AND NDH ROOF ADAPTORS

NK (see figure # 14) and NDH (see figure # 15) universal roof adaptors serve to fit RF fans on the roof, and they can also be used to connect square air ducting. The adaptors are terminated in a 150 mm wide base shoe (base plate) to fit and install them on the roof. The adaptors must be firmly anchored to the roof structure. Four M8 threads, spacing G × G, situated on the bottom side of the base, enable the square air duct flange to be connected. The adaptors are made of galvanized sheet steel, and sealed with waterproof sealing. Inner anti-condensate insulation is made of 20 mm thick, flame-retardant polyethylene foam plate which is glued and mechanically secured by pins. Four M8 threads, spacing A2 × A2, situated on the top side of the adaptor, enable the RF fan to be mounted.
Both types of adaptors in their upper part provide enough room for the VS back-flow damper. The NDH roof adaptor is equipped with an additional attenuator. For pressure losses of NDH roof adaptors, refer to page 176. For attenuation capacity in octave bands D_{okt} of NDH roof adaptors and inherent noise $L_{WA\,okt}$, refer to page 177. Shown values do not include weighting filter corrections.

FIGURE 14 – DIMENSIONS OF NK ROOF ADAPTORS

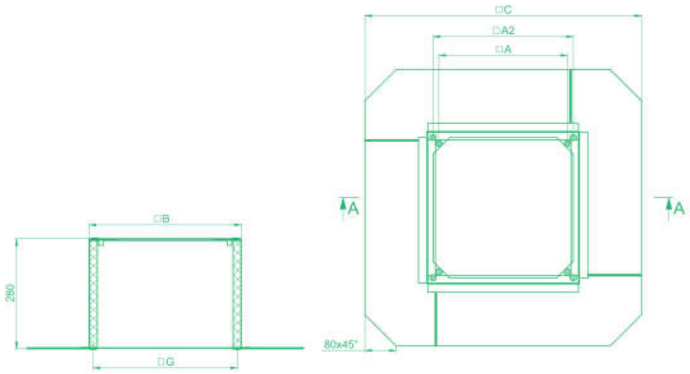


FIGURE 15 – DIMENSIONS OF NDH ROOF ADAPTORS

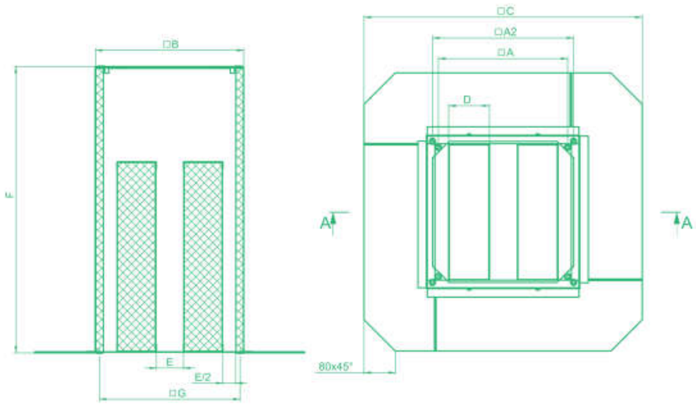
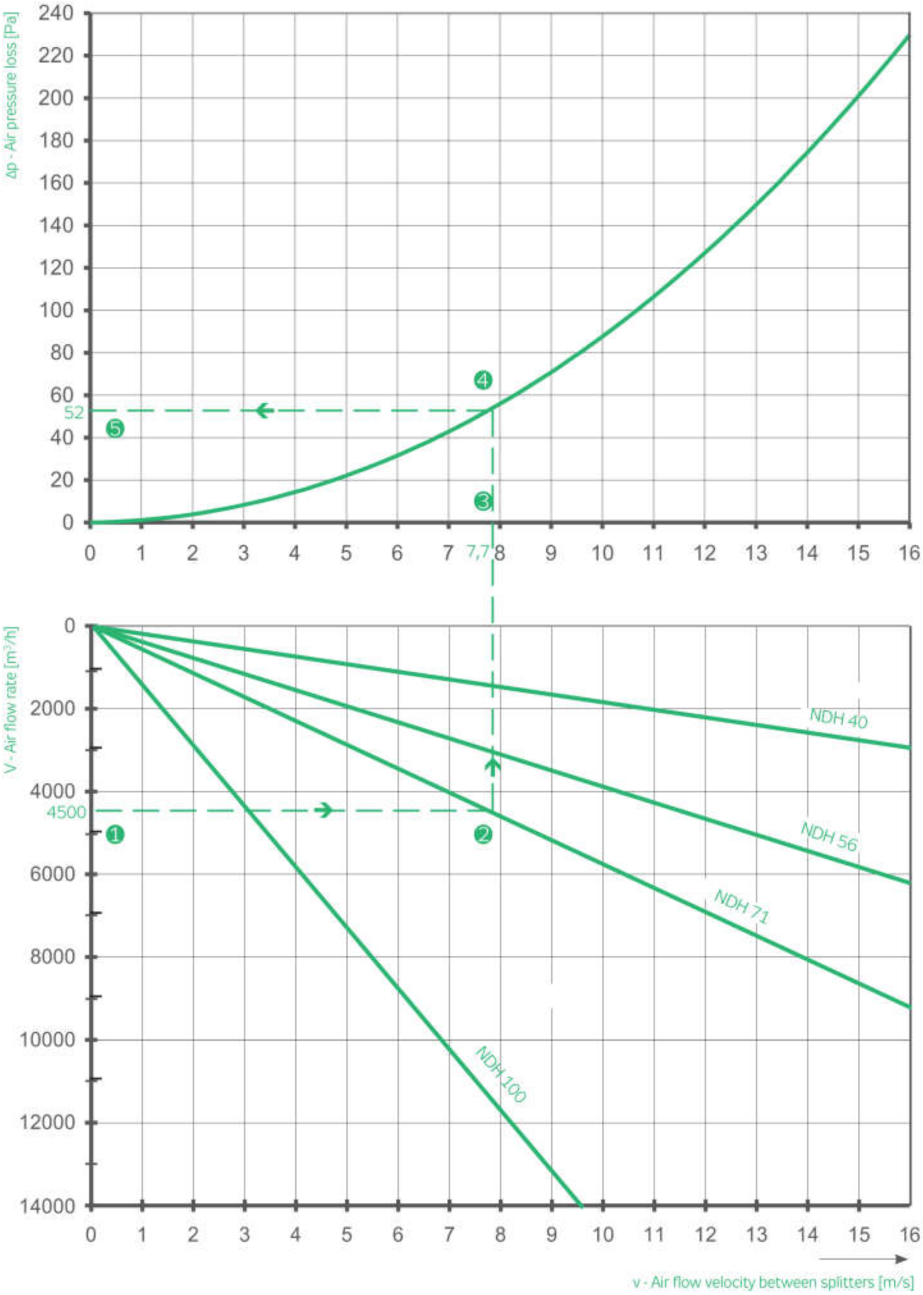


TABLE 11
DIMENSIONS/WEIGHTS OF ROOF ADAPTORS

Type/size	A (RS)	A2 (RF)	B	C	D	E	F	G	m (kg)
NK 40	330	360	390	710				370	9,5
NDH 40	330	360	390	710	104	71	750	370	20
NK 56	450	520	550	870				530	12,5
NDH 56	450	520	550	870	104	66	750	530	29
NK 71		670	700	1020				680	15
NDH 71		670	700	1020	104	61	800	680	41
NK 100		960	990	1310				970	22
NDH 100		960	990	1310	104	86	900	970	69

AIR PRESSURE LOSSES OF ALL NDH ROOF ADAPTORS



The nomogram of pressure losses is valid for all NDH roof adaptors. For the selected air flow rate ❶, the air flow velocity ❸ between the splitters of the NDH roof adaptor ❷ can be read in the lower graph, and then the corresponding air pressure loss of the NDH roof adaptor ❺ at the known velocity can be determined in the upper part ❹.

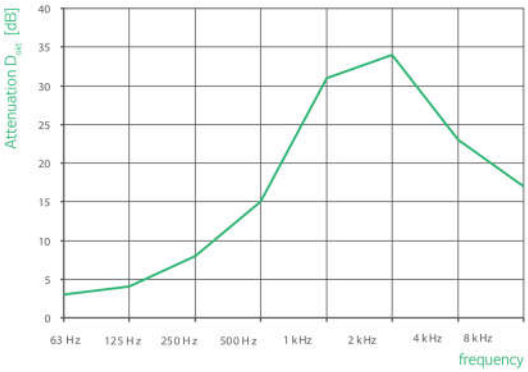
Example: At an air flow rate of 4,500 m³/h, the velocity of the air flow between the splitters of the NDH 60 roof adaptor will be 7.7 m/s. The air pressure loss for the above-mentioned air flow rate will be 52 Pa.

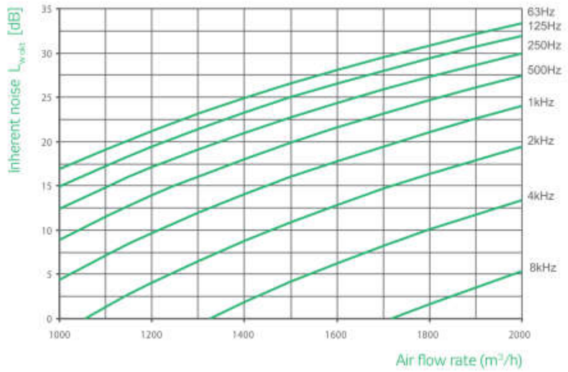
ATTENUATION AND INHERENT NOISE OF NDH ROOF ADAPTORS

ATTENUATION

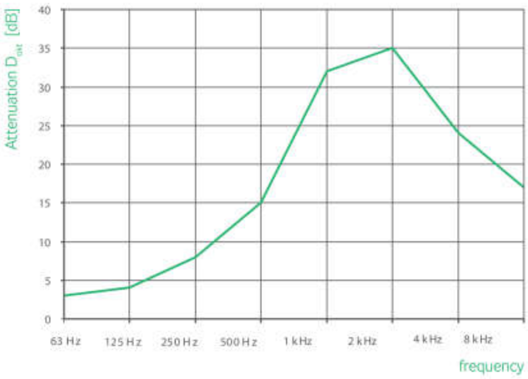
INHERENT NOISE

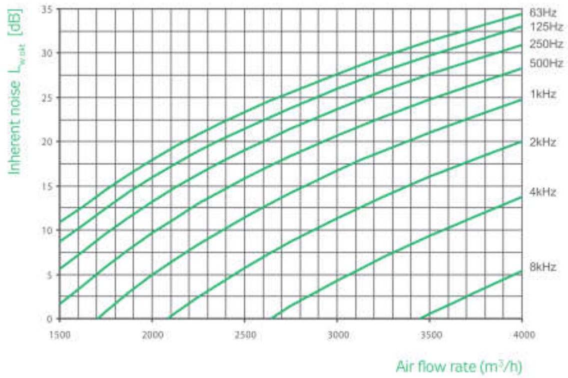
NDH 40



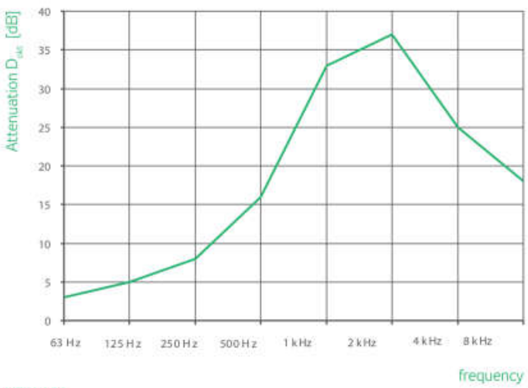


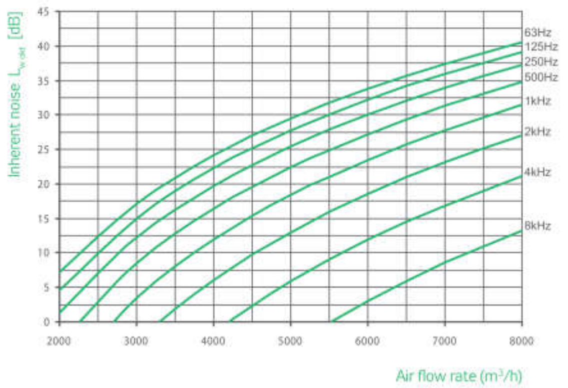
NDH 56



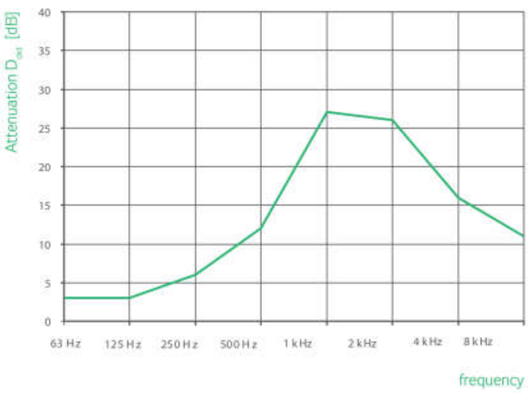


NDH 71





NDH 100



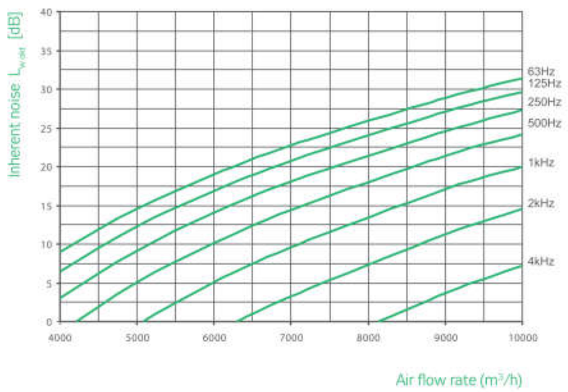
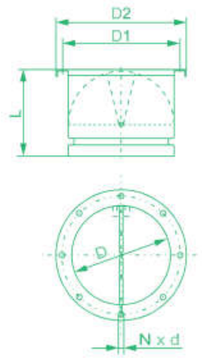


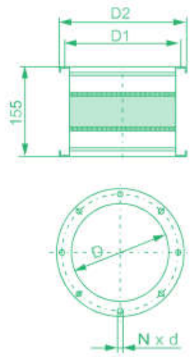
FIGURE 16



VS LOW-PRESSURE DAMPERS

The VS low-pressure back-flow damper is designed to block back-airflow into the ventilated room. Upon starting the fan, the damper is automatically opened by the negative pressure. Light damper flaps are made of thin aluminium sheets. The low-pressure damper is equipped with a single flange made of galvanized steel sheet. It can be installed directly on the base plate of the fan using screws threaded into the prepared threads in the base plate. VS low-pressure dampers are intended for NK and NDH roof adaptors. For the pressure loss characteristics of VS low-pressure dampers, refer to the next page (figure # 16).

FIGURE 17



DK ELASTIC CONNECTIONS

The DK round elastic connection serves to eliminate the transfer of vibrations to the connected air ducting. If the NDH roof adaptor is not installed, it can be used to connect the round duct to the roof fan. The DK elastic connection can be connected to the roof fan's base plate using the prepared threads. It is made of an elastic sleeve resistant to temperatures up to +70 °C. At both ends, it is terminated in flanges made of galvanized steel sheets. The flanges are conductively interconnected by a copper girdle.
(figure # 17)

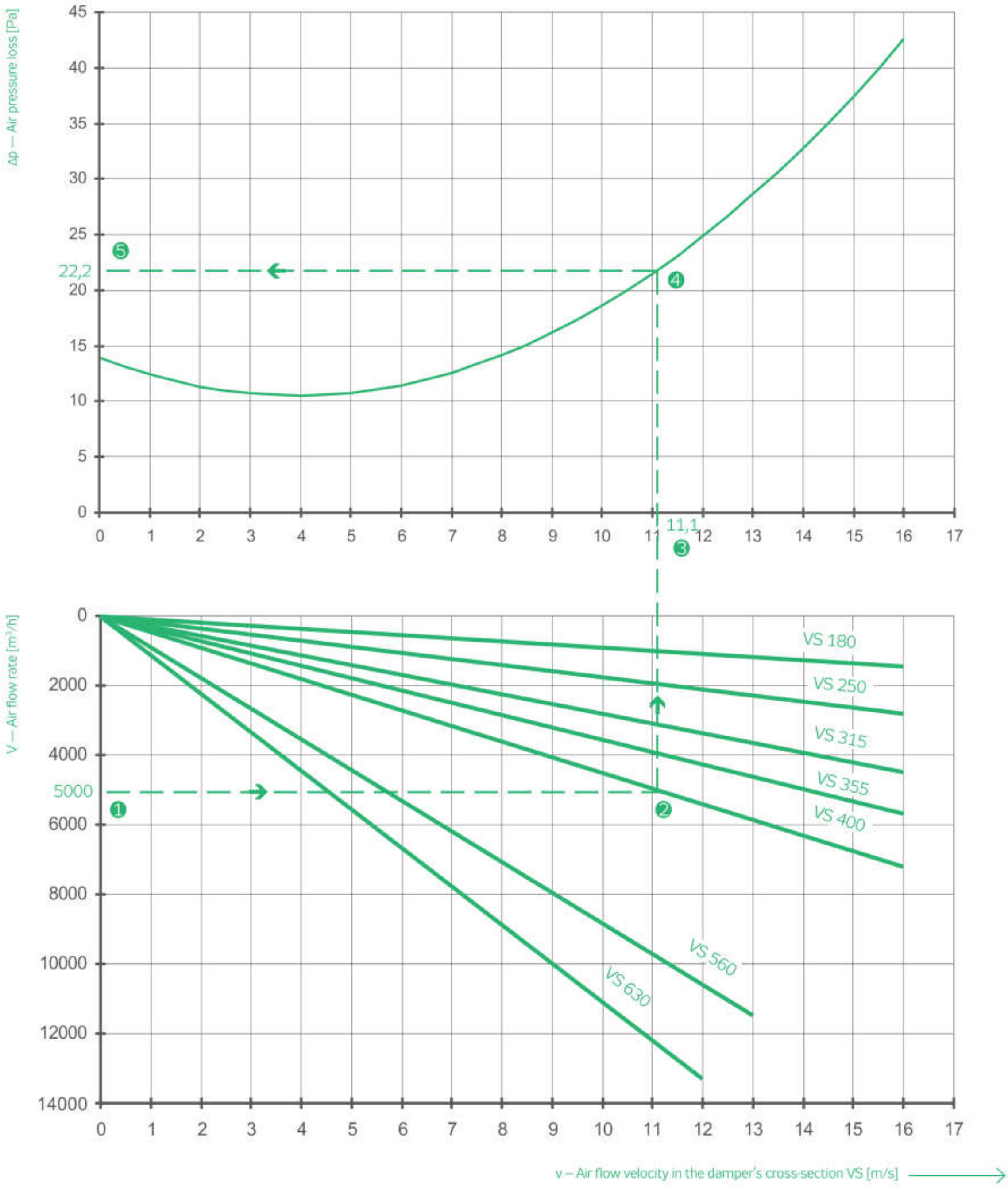
TABLE 12 – DIMENSIONS OF DAMPERS (USED WITH RF FANS) IN MM

RF / Size	VS	D	D1	D2	d	N	L
RF 40/19-2E	180	180	215	240	10	8	150
RF 40/22-2E							
RF 40/25-2E	250	250	285	310	10	8	150
RF 40/28-4E							
RF 56/31-4D							
RF 56/31-4E							
RF 56/35-4D	315	315	350	375	10	12	150
RF 56/35-4E							
RF 56/40-4D	355	355	390	415	10	12	150
RF 56/40-4E							
RF 71/45-4D	400	400	445	480	12	12	185
RF 71/50-4D							
RF 71/50-6D							
RF 100/56-4D	630	630	680	720	12	16	300
RF 100/56-6D							
RF 100/63-6D							
RF 100/71-6D							

TABLE 13 – DIMENSIONS OF ELASTIC CONNECTIONS (USED WITH RF FANS) IN MM

RF / Size	DK	D	D1	D2	d	N
RF 40/19-2E	180	180	215	240	10	8
RF 40/22-2E						
RF 40/25-2E	250	250	285	310	10	8
RF 40/28-4E						
RF 56/31-4D						
RF 56/31-4E						
RF 56/35-4D	315	315	350	375	10	12
RF 56/35-4E						
RF 56/40-4D	355	355	390	415	10	12
RF 56/40-4E						
RF 71/45-4D	400	400	445	480	12	12
RF 71/50-4D						
RF 71/50-6D						
RF 100/56-4D	630	630	680	720	12	16
RF 100/56-6D						
RF 100/63-6D						
RF 100/71-6D						

AIR PRESSURE LOSS OF VS LOW-PRESSURE DAMPERS



The nomogram of pressure losses is valid for all VS dampers. For the selected air flow rate ❶, the air flow velocity ❸ in the free damper's cross-section ❷ can be read in the lower graph, and then the corresponding VS damper's air pressure loss ❺ at the known velocity can be determined in the upper part ❹.

Example: At an air flow rate of 5,000 m³/h, the velocity of the air flow in the damper will be 11.1 m/s. The air pressure loss of the VS 400 damper for the above-mentioned air flow rate will be 22 Pa.

FIGURE 18 – ROOF ADAPTOR ON A FLAT ROOF

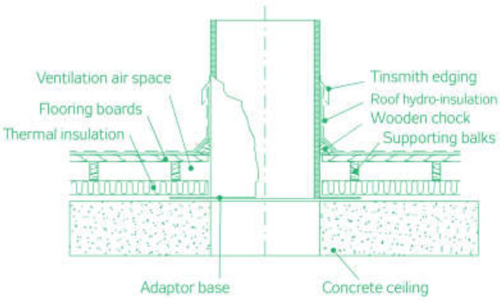


FIGURE 19 – ROOF ADAPTOR ON A SLOPING ROOF

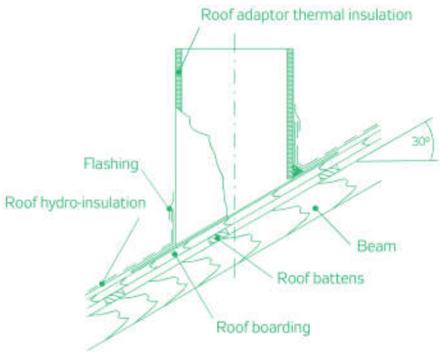


FIGURE 20 – CONNECTION OF THE AIR-HANDLING DUCT

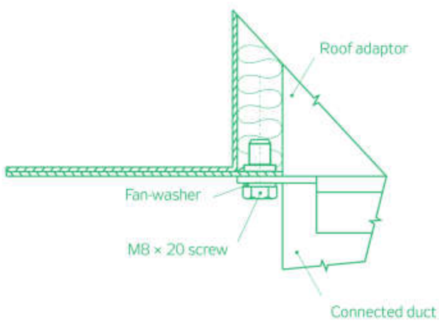
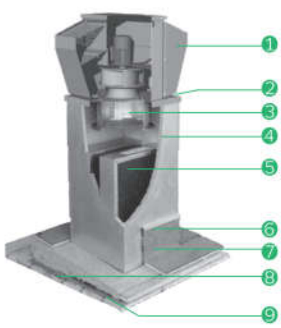


FIGURE 20 – FAN BASE INSTALLATION



FAN ACCESSORIES INSTALLATION

→ NK or NDH roof adaptors make the installation of RF fans significantly easier and faster. The roof adaptors can be used on almost any type of roof.

→ The opening in the roof construction must not be larger than the adaptor platform and should be of a precise square shape.

→ The contact surfaces of the roof adaptor base and roof construction must be thoroughly sealed with sealing cement.

→ The wiring cable can be led through the roof adaptor and through the RF fan supporting stud into the terminal box.

→ Roof hydro-insulation must always be applied on the roof adaptor up to a height of 30 cm above the roof. The end of the roof hydro-insulation must be completed with flashing to prevent water penetration (figure # 18).

→ After installation, the roof adaptors need to be finished in a protective coating matching the building's colour according to the architect's choice.

→ Roof adaptors for applications on sloping roofs can be delivered with their platforms modified to the roof slope. The roof sloping angle must be specified in your order (figure # 19).

→ Standard roof adaptors (without slope) can also be connected to the air-handling ducting. The details of the connection are shown in figure # 20. Four M8 riveted nuts are situated in the adaptor's base plate. The dimensions of the nut pitches are shown in the figure in the introduction part.

1. RF Roof Fan
2. Fan base
3. Self-acting VS low-pressure damper
4. Thermally-insulated NDH roof adaptor
5. Attenuator in the NDH roof adaptor
6. Flashing
7. Roof hydro-insulation
8. Roof beams and boards (respectively concrete)
9. Roof adaptor base